

Nuclear Weapons and Coercive Escalation in Regional Conflicts

Lessons from North Korea and Pakistan

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With Contributions from Ken Gause and Afshon Ostovar

November 2014



Report Documentation Page			Form Approved OMB No. 0704-0188	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE NOV 2014	2. REPORT TYPE	3. DATES COVERED 00-00-2014 to 00-00-2014		
4. TITLE AND SUBTITLE Nuclear Weapons and Coercive Escalation in Regional Conflicts: Lessons from North Korea and Pakistan				
5a. CONTRACT NUMBER				
5b. GRANT NUMBER				
5c. PROGRAM ELEMENT NUMBER				
6. AUTHOR(S)				
5d. PROJECT NUMBER				
5e. TASK NUMBER				
5f. WORK UNIT NUMBER				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) CNA Analysis & Solutions,3003 Washington Boulevard,Arlington,VA,22201			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT Nuclear weapons may create greater space for smaller powers to engage in coercive attacks and even limited military operations at lower levels of escalation. This study explores this phenomenon through examination of two case studies: North Korea and Pakistan. The paper addresses key trends and current thinking on nuclear deterrence, reviews recent research on nuclear weapons and coercion, develops testable hypotheses based on this literature, and explores these questions through analysis of North Korean and Pakistani nuclear capabilities, strategy, and doctrine, as well as instances of coercive escalation by both countries. The paper concludes by identifying common themes across the two cases and drawing implications for U.S. policy and military strategy.				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 82
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	19a. NAME OF RESPONSIBLE PERSON	



This document contains the best opinion of CNA at the time of issue.
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November 2014

A handwritten signature in black ink that reads "Ken E. Gause". The signature is fluid and cursive, with "Ken E." on top and "Gause" below it, with a horizontal line extending from the end of "Gause".

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Abstract

Nuclear weapons may create greater space for smaller powers to engage in coercive attacks and even limited military operations at lower levels of escalation. This study explores this phenomenon through examination of two case studies: North Korea and Pakistan. The paper addresses key trends and current thinking on nuclear deterrence, reviews recent research on nuclear weapons and coercion, develops testable hypotheses based on this literature, and explores these questions through analysis of North Korean and Pakistani nuclear capabilities, strategy, and doctrine, as well as instances of coercive escalation by both countries. The paper concludes by identifying common themes across the two cases and drawing implications for U.S. policy and military strategy.

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Executive Summary

The proliferation of nuclear weapons and delivery systems threatens to restrict U.S. options in future conflicts. It may be increasingly difficult to act militarily without risking escalation to nuclear war. For relatively weak states facing threats of military action by larger powers such as the United States, a key lesson from recent interventions is that nuclear weapons are the ultimate protection against defeat in war. Had Libya under Muammar Gaddafi or Iraq under Saddam Hussain had a credible nuclear deterrent, the United States and NATO might have thought twice before attempting to overthrow these regimes by force.

Because nuclear weapons appear to take major war and regime change off the table, they promise greater space for smaller powers to conduct proxy warfare, violent provocations, and even limited military operations at lower levels of escalation. These developments pose a dilemma for the world's status quo powers: responding militarily could lead to escalation and the risk of nuclear war, but failing to do so could lead to a cascade of low-level coercion in the future.

Since acquiring nuclear weapons, North Korea and Pakistan – the two cases examined in this study – have engaged in coercive and violent provocations, calculating that their larger rivals would concede rather than risk escalation that could lead to nuclear use. Both are revisionist powers with nuclear weapons that face rivals with significantly greater conventional military capabilities. So far, the phenomenon of coercive escalation by nuclear powers appears to be largely confined to Pakistan and North Korea. Yet, it has the potential to become a wider problem if additional countries with revisionist aims – Iran, for example – acquire nuclear weapons.

Policy-makers may need a mix of strong but proportionate military options designed to counter and deter offensive actions at lower levels of conflict while controlling follow-on escalation. This may require a more diverse array of usable conventional capabilities and greater attention to escalation control in military planning and concepts of operation.

This paper addresses recent research on nuclear weapons and coercion, develops testable hypotheses based on this literature, and explores these questions through analysis of North Korean and Pakistani nuclear capabilities, strategy, and doctrine, including the development of limited nuclear options by Pakistan. The paper also explores instances of coercive escalation by both countries – including torpedo and artillery strikes on South Korean forces in 2010, and limited ground incursions and

terrorist attacks attributed to Pakistan in 1999 and 2001. The case studies end with a brief analysis of subsequent changes to South Korean and Indian military doctrines as a result of these events. The study concludes by identifying common themes across the two cases and drawing implications for U.S. policy and military strategy.

Findings

Our research suggests that escalatory provocations, such as those traced back to Pakistan in 1999 and 2001 and to North Korea in 2010, are not likely in the near future, but remain a real possibility in the longer term. Neither regime gained much from the crises that resulted from these attacks, which suggests that possession of nuclear weapons may not, in fact, lend coercive leverage to smaller powers, regardless of their apparent resolve to actually use nuclear weapons. South Korea and India appear more resolved than ever to resist attempts at coercion spurred by offensive actions that create the risk of nuclear conflict.

In the more distant future, however, the potential for renewed provocations of similar or greater magnitude cannot be ruled out – particularly as the North Korean and Pakistani nuclear programs develop and cross key thresholds. Nuclear weapons have taken on an increasing role in the defense policies of both countries as their conventional capabilities have deteriorated in relative terms. Both countries continue to pursue revisionist aims through force and demonstrate a tendency towards nuclear brinkmanship. Though Pyongyang and Islamabad appear to have gained little from attempts at coercive escalation, there appear to be elements in both regimes who view violent provocations as a promising and viable option.

Evidence from crises on the Korean Peninsula and the Indian subcontinent suggest that attempts at low-level coercion can, at least to some extent, be deterred. Limited military responses by South Korea and India appear to have had some effect on the strategic calculus in Pyongyang and Islamabad. There have been no North Korean provocations on the scale of the 2010 attacks since South Korea's forceful response to the shelling of its marines in November of that year. Pakistan has not attempted military action in Kashmir since being repulsed by Indian forces in 1999, and has taken some, if limited, action against the militant groups responsible for the 2001 attack on India's Parliament following threats of military action by New Delhi. On the other hand, continued Pakistani tolerance of militant groups such as those responsible for the 2001 Parliament attack suggests that future crises sparked by violent provocations remain a real possibility.

Provocations directed against India and South Korea have driven both countries to set aside traditionally defensive military postures and pursue options for limited offensive action in the event of another attack, including employment of precision weapons. These measures appear to have had some deterrent effect on leaders in Pyongyang and Islamabad. At the same time, these trends, combined with the

continued development of the Pakistani and North Korean nuclear programs, raise the potential that the next provocation could lead to inadvertent escalation, possibly resulting in limited nuclear use by Pakistan or North Korea. Pakistan's pursuit of tactical nuclear weapons is of particular concern, as is the potential for North Korea to follow Pakistan's path as its nuclear capabilities develop.

Implications for policy

As the United States has reduced the role of nuclear options in its defense strategy and relied increasingly on conventional weaponry, North Korea and Pakistan have moved in the opposite direction. Long-term shifts in the conventional balance across Asia appear to be driving these changes, which suggests that they are here to stay. While violent provocations resulting in potentially escalatory military crises may not be very likely in the short term, our research suggests that they could occur further down the road.

Policy-makers will need options that promise to counter acts of low-level coercion and deter future attempts. At the same time, they will need tools – military and diplomatic – aimed at controlling escalation and minimizing the risk of nuclear use. This will be important for extended deterrence as well, because allies and partners are the more likely victims of low-level coercion. Defending them will be important for continued U.S. influence in Asia. Forward-deployed conventional forces capable of calibrated responses to low-level attacks and other acts of coercion are likely to play a central role.

The United States may also be called upon to mediate in crises between nuclear powers sparked by provocative acts of violence. Such mediation might include efforts to rein in South Korean and Indian forces keen to respond militarily to provocations. Attacks where attribution is not clear will prove a considerable challenge for deterrence and escalation control. Covert operations that afford some measure of plausible deniability could make it difficult to justify a military response. Where the originator is truly unknown, retaliation could involve considerable risks of escalation. The military crisis sparked by the 2001 attack on India's Parliament indicated that a non-state group operating independently could provoke a war between nuclear powers.

Despite the best efforts of policy-makers in Washington, there remains the possibility that a crisis sparked by a violent provocation will result in limited nuclear strikes by a smaller power facing the prospect of military defeat. Such an attack could be directed at U.S. or allied forces. Realistic options will be needed for such contingencies.

Against limited nuclear strikes, non-nuclear threats may be more credible under certain conditions, given the lower threshold for use of even the most destructive

conventional weaponry. Contingencies involving non-strategic nuclear strikes – for example, using a low-yield nuclear warhead, particularly against a non-strategic target – fall into a grey area where the threat of a strategic nuclear response may not be credible, particularly over issues that are not of existential concern to U.S. decision-makers. If non-nuclear munitions are capable of achieving the right effects to end the conflict or deliver a disarming counterforce strike, threats of nuclear retaliation may not be necessary.

Military options

Military commanders may need a diverse array of usable conventional options, particularly at the lower ends of the warfare spectrum. When it comes to deterring low-level coercion, conventional capabilities will be essential, as nuclear threats are not likely to be credible against low-level attacks.

The problems identified in this study suggest that commanders may need a variety of military options below the threshold of major combat operations, aimed at sending a message rather than disarming an adversary. These options would need to be proportionate, timely, precise, and calculated to signal both resolve and restraint. Capabilities that might enable such responses include tactically oriented unmanned platforms, conventional cruise missiles, special operations forces, and non-kinetic options such as cyber and electronic attack. Employing ground forces may not be advisable, given the risks of becoming tied down in a protracted conflict.

Attempts to deter small-scale attacks through limited military operations could involve considerable risk of escalation. Escalation control would need to be a central planning factor in the design and employment of military options, taking into account aspects of the target regime.

Escalation control measures must be integrated into war plans and concepts of operation. Military commanders may need to allow adversary leaders a way out in a crisis in order to avoid trapping them in an escalatory spiral. In the event of a strike that could be perceived as a strategic threat, it may be advisable to signal that the attack is limited, through public statements, discreet diplomatic and military channels, and careful choice of targets, weapons, and flight paths.

Finally, U.S. forces may need credible options in the event that a crisis spirals out of control and results in a limited nuclear attack. In the face of a credible and impending threat of nuclear use, a disarming counterforce strike may be the only viable option short of capitulation. The ability to credibly threaten disarming preemptive strikes may also serve as a powerful deterrent against coercion by new nuclear powers.

These findings suggest a need for additional research into the dynamics of escalation at the lower ends of the warfare spectrum, including non-violent acts of coercion. Recent exploits by Russia in the Ukraine and China in the western Pacific threaten to chip away at U.S. power and influence unless effective responses can be developed. The development of tactical nuclear weapons by Russia and Pakistan also requires further study. In particular, more work is needed on the appropriate range of responses should U.S. or allied forces become the target of a non-strategic nuclear attack.

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Introduction

Background and problem statement

The proliferation of nuclear weapons and delivery systems threatens to blunt U.S. military power and restrict U.S. options in future conflicts, irrespective of the military balance and U.S. investments in new technologies and weaponry. Recent authors such as Paul Bracken have noted that as potential adversaries acquire nuclear weapons, it will be increasingly difficult for the United States to employ the full extent of its vastly superior conventional capabilities without risking escalation to nuclear war.¹ According to Keir Lieber and Daryl Press, smaller powers face strong incentives to acquire nuclear weapons and to use or threaten to use them in the event of a major war in order to forestall defeat - what Lieber and Press term "coercive nuclear escalation."²

North Korea and Pakistan have sought to leverage their new-found nuclear capabilities as a cost-effective means to compensate for inferior or atrophying conventional capabilities, in order to blunt the advantages of their militarily more powerful rivals and to protect themselves against defeat in a conventional war. Had Libya under Muammar Gaddafi or Iraq under Saddam Hussain had a credible nuclear deterrent, the United States and NATO would have thought twice before attempting to overthrow these regimes by force. According to their own statements, North Korean leaders in particular appear to have taken this lesson to heart.

In the last 20 years, a variety of countries have invested in increasingly cheap and easily available missiles and have made advancements towards putting warheads on missiles of different ranges. A growing number of potentially nuclear-capable delivery vehicles have been fielded on road-mobile launchers, dispersed across difficult terrain, and buried underground - thereby increasing their survivability. At the same time, Pakistan and Russia are integrating their nuclear forces into conventional operations and war plans and fielding tactical nuclear weapons for battlefield use. These and other trends suggest that the dynamics of nuclear

¹ Paul Bracken. *The Second Nuclear Age: Strategy, Danger, and the New Power Politics*. New York, NY: Times Books 2012.

² Keir A. Lieber and Daryl G. Press. "The Nukes We Need." *Foreign Affairs* 8 (2009).

deterrence today – in what Bracken and other experts have termed the “second nuclear age” – present a variety of new problems that may require fresh solutions.

Among the most troublesome of these emerging challenges is the threat of low-level attacks and provocations by smaller nuclear powers. The proliferation of nuclear weapons and delivery systems may create greater space for potential adversaries to engage in provocations and even limited military operations at lower levels of escalation. North Korea and Pakistan, revisionist powers that face rivals with significantly greater conventional military capabilities, have pursued nuclear weapons in order to restrain conventionally superior opponents, while engaging in coercive provocations and limited military operations – calculating that their more powerful rivals will concede rather than risk escalation that could lead to a nuclear exchange. So far, this behavior appears to be largely confined to Pakistan and North Korea, but it has the potential to become a wider problem if additional countries with revisionist aims – Iran, for example – acquire nuclear weapons.

Relatively little is known about the strategies of smaller powers with nuclear arsenals, especially those with revisionist intentions, and how they might attempt to use the threat of nuclear escalation to coerce the United States, its allies, and its partners. Keir Lieber and Daryl Press have addressed the risk of nuclear use during major conventional conflicts, an important issue that had previously received little attention. Limited conflict and coercion at the lower levels of the warfare spectrum remains an understudied problem. Traditional U.S. deterrence concepts and postures – mostly focused on deterring major war by near-peer competitors such as Russia and China – are not well suited to addressing attempts at low-level coercion by secondary nuclear powers with limited conventional capabilities.

Even less is known about how to respond to attempts at coercion in ways that promise to strengthen deterrence while minimizing the threat of nuclear use. Failure to respond could open the United States and other friendly nations to a cascade of coercive threats in the future. U.S. policy-makers and military commanders will need to deter and counter attempts at coercive escalation by nuclear-armed adversaries, to control escalation when crises occur, and perhaps to fight such adversaries if the need arises.

Methodology

This study rests on comparative analysis of North Korea and Pakistan – two countries with relatively new nuclear programs that are known to have engaged in acts of coercion while possessing nuclear weapons.³ Both are third-tier powers engaged in

³ India first tested a nuclear device in 1974.

long-standing confrontations with conventionally more powerful rivals over disputed borders. North Korea is a country with an advancing nuclear weapons program and a substantial track record of engaging in low-level attacks and other provocations against South Korea – often over islands and waters controlled by South Korea. Pakistan is a country with a longer track record of coercive escalation against its larger rival India. Analysis of Pakistan promises to shed further light on the dynamics of coercive escalation, even though the country is not a U.S. adversary.

In the case studies, we examine North Korean and Pakistani nuclear capabilities, including warheads and delivery options. Next, we analyze the regimes' strategic and operational thinking on nuclear weapons, in order to understand the rationale behind attempts at low-level coercion under the threat of nuclear conflict. Finally, we examine nuclear crises instigated by low-level attacks attributed to North Korea and Pakistan – including two unprovoked attacks by North Korea in 2010 and Pakistan-based provocations against India in 1999 and 2001. These crises promise to shed light on the dynamics of coercive escalation and the likelihood and potential character of such escalation in the future.

The comparison of North Korea and Pakistan and the identification of trends across the two cases promise to yield additional insights that are based on empirical evidence of observed behavior rather than hypothetical scenarios. The two countries share some key characteristics: both are regional powers with limited conventional capabilities engaged in long-running confrontations with larger nuclear powers; both have a history of brinkmanship and a high tolerance for risk; and both have revisionist aims concerning disputed territory and a history of employing violent means in pursuit of these aims. Examination of Pakistan's nuclear posture, which is in a more advanced stage of development than North Korea's, may also yield useful insights into North Korea's future direction and some of the challenges that might be in store for the United States and its allies in Asia if North Korea's nuclear capabilities continue to improve.

There are also important differences between Pakistan and North Korea that limit the degree to which generalizations can be made across the two cases. Unlike North Korea, Pakistan is not an adversary of the United States. The dynamics on the Korean Peninsula are different from those in South Asia along multiple dimensions, partly due to the presence of U.S. forces in South Korea. Unlike Pakistan, North Korea has placed priority on acquiring long-range missiles capable of reaching the United States. The regime in Islamabad is a mix of democracy and military praetorianism, while North Korea is a totalitarian state with a supreme leader who retains tight control over nuclear matters. Given these and other differences, there is reason to approach comparisons between the two countries with caution.

In this study, we first give an overview of key trends and current thinking on nuclear deterrence as it relates to the questions posed above. We then present the two case studies. Finally, we discuss common themes across both cases, draw implications for

the United States, and discuss potential options for policy-makers and military commanders.

Taken together, these case studies provide valuable insights into the challenges associated with deterring and countering attempts at low-level coercion, allowing us to draw implications for policy and strategy that are based on concrete examples. This approach provides additional understanding beyond what is possible through hypothetical scenarios and war games. The study relies on secondary sources, including previous CNA research on Pakistan and North Korea, as well as interviews in Seoul, South Korea, with South Korean defense analysts and officials at U.S. Forces Korea.

Assumptions and definitions

In order to adequately scope our analysis, we make several necessary assumptions that if wrong (or altered as a thought experiment) might change the analysis. First, we assume that these regimes are “rational actors” – i.e., that their leaders make cost-benefit calculations in pursuit of strategic aims that could, in theory, be identified given sufficient information. We recognize that dynamics internal to each country may affect important decisions, especially the character and timing of provocations, but assume that these are the product of a rational strategic calculus. Second, we assume that the governments under scrutiny are not in immediate danger of collapse or fracture. The collapse of North Korea or Pakistan would pose a very different set of challenges, such as theft or loss of nuclear material or the unauthorized launch of nuclear weapons.

Current Thinking on Nuclear Deterrence

Since the end of the Cold War, as nuclear weapons and delivery systems have proliferated, the challenges associated with deterring nuclear-armed adversaries have become increasingly dynamic, complex, and diverse. Many of the qualities that characterized nuclear deterrence between the United States and the Soviet Union during different periods of the Cold War remain, but often in altered form. There are also a number of new threats emerging, particularly from Pakistan and North Korea – smaller nuclear powers that illustrate the potential dangers of nuclear proliferation in the post-Cold War world. Meanwhile, the nuclear postures of China and Russia are evolving in different directions as both countries invest in new capabilities and respond to changes in the international security environment.

These changes have spurred analysts on deterrence to rethink many assumptions that were taken for granted during the Cold War. In this section, we describe some of the key trends and evolutions of the “second nuclear age.” We then examine recent research on the relationship between nuclear weapons and coercive bargaining in international conflicts.

Characteristics of the second nuclear age

Analysts frequently refer to the “second nuclear age” to describe the unique dynamics of deterrence in the post-Cold War world. Experts have pointed to a wide range of qualities in an effort to adequately describe this new era. Some of these trends are particularly relevant to the questions raised in this study.

The bomb as a weapon of the weak

A growing number of potential U.S. adversaries are investing in what Paul Bracken calls “disruptive technologies” that promise to either counter America’s superior conventional weaponry or prevent it from being used, without attempting to actually match U.S. capabilities. Nuclear weapons are the most potent disruptive technology.

A credible nuclear deterrent could, under the right conditions, considerably restrict U.S. military options – even against adversaries with limited defenses.⁴

The deterrent value of nuclear weapons makes them a particularly attractive option for countries that are vulnerable to attack from larger powers. A credible nuclear deterrent promises to provide security from defeat in war and regime change. As a result, second-tier powers engaged in prolonged confrontations with more powerful rivals have a strong incentive to acquire a robust nuclear deterrent and to rely heavily on nuclear weapons for national defense.⁵ They also have good reason to threaten first use of nuclear weapons in a crisis, given the fact that they could lose very quickly in a conventional conflict.

According to Bracken, given the enormous risks involved in nuclear conflict, confrontations between nuclear powers tend to be dominated by contests of risk and resolve rather than actual military capabilities – a situation that could lend advantage to smaller powers. Bracken argues that the “balance of resolve” may favor a country such as North Korea or Pakistan, though the balance of capabilities is not at all in their favor.⁶

Both countries have demonstrated an extraordinary tolerance for risk and a penchant for brinkmanship that was not evident between the United States and the Soviet Union during the Cold War. Much of this brinkmanship relies on apparently suicidal and self-destructive tactics. Pakistan is often described as a country that “negotiates with a gun to its own head.” North Korean officials, in negotiations with the United States and South Korea, have been quoted as saying, “We are willing to cut off our leg, and you are not willing to cut off your pinkie.”

On the other hand, recent empirical research by Todd Sechser and Mathew Fuhrmann casts doubt on the efficacy of nuclear brinkmanship in international crises and calls into question the salience of what Bracken calls the “balance of resolve.” It is not entirely clear that attempts at nuclear brinkmanship actually yield identifiable

⁴ Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics*, 2012, 146-149.

⁵ Ashley J. Tellis. “No Escape: Managing the Enduring Reality of Nuclear Weapons.” In *Asia in the Second Nuclear Age*. Edited by Ashley J. Tellis, Abraham M. Denmark, and Travis Tanner. Seattle, WA and Washington D.C.: The National Bureau of Asian Research, 2013, 11. Keir A. Lieber and Daryl G. Press. *Coercive Nuclear Campaigns in the 21st Century: Understanding Adversary Incentives and Options for Nuclear Escalation*. Naval Postgraduate School Report Number 2013-001. 2013, 2.

⁶ Toshi Yoshihara and James R. Holmes. “Thinking about Strategy in the Second Nuclear Age.” In *Strategy in the Second Nuclear Age: Power, Ambition, and the Ultimate Weapon*. Edited by Toshi Yoshihara, and James R. Holmes. Washington D.C.: Georgetown University Press 2012, 231-232.

concessions during international crises. Countries such as Pakistan and North Korea may engage in brinkmanship, calculating that by signaling superior resolve they may succeed in forcing more powerful countries to back down. The extent to which they have been successful, however, is an open question that deserves greater empirical scrutiny.⁷

The blurring of lines between nuclear and conventional

Technological advancements such as prompt global strike are blurring the lines between conventional and nuclear warfare. The growing accuracy, range, and destructive power of conventional weaponry have made it possible to achieve strategic effects through conventional strikes alone. For smaller powers whose defenses could be effectively destroyed in a preemptive attack and whose key leadership and command nodes could be quickly destroyed, the potential threat from conventional attack approaches that of nuclear weapons in strategic significance. At some point, smaller adversaries may no longer distinguish between conventional and nuclear strikes, but instead threaten to respond to any major attack with nuclear weapons.⁸

During the Cold War, U.S. war planners thought of counterforce operations – that is, strikes intended to destroy or disable the Soviet Union's nuclear forces – mainly in terms of nuclear strikes. Conventional weaponry was not sufficiently powerful to do the job. In today's world, it appears increasingly possible to eliminate much of an adversary's nuclear force entirely through conventional strikes – especially countries with relatively small arsenals and weak air defenses.⁹ It is possible that nuclear warheads may be needed only to strike deeply buried targets.¹⁰

Some analysts have argued that the evolution in U.S. precision strike capabilities may be pushing smaller powers to blur the lines between conventional and nuclear. Nuclear weapons are a relatively inexpensive counter to high-end conventional weaponry. Russia and Pakistan, for example, are relying increasingly on non-strategic (often called tactical) nuclear weapons likely to be used in response to a conventional (vice a nuclear) attack. Both countries are integrating use of tactical nuclear weapons into conventional war plans and training. Relatively short-range, low-yield nuclear

⁷ On Sechser and Fuhrmann's work, see section below on recent research.

⁸ Yoshihara and Holmes, "Thinking about Strategy in the Second Nuclear Age," 2012, 236-238.

⁹ Tellis, "No Escape: Managing the Enduring Reality of Nuclear Weapons," 2013, 11.

¹⁰ Charles Glaser and Steve Fetter. "Counterforce Revisited: Assessing the Nuclear Posture Review's New Missions." *International Security* 30 (2005).

weapons could be used against conventional forces at the operational level of war as part of a military campaign. These evolutions threaten to lower the threshold for nuclear use, particularly in regional conflicts.

The pursuit of survivability in the face of long-range precision strike

The development and proliferation of highly accurate conventional weapons systems have created new threats to the survivability of nuclear arsenals around the world, especially among new and incipient nuclear powers. Countries such as Iran, North Korea, and Pakistan have gone to extraordinary lengths to reduce the vulnerability of their nuclear assets and delivery systems to disarming precision strikes. Many of these measures are potentially destabilizing and raise serious concerns about the safekeeping of these countries' nuclear arsenals.

Over the last decade, there has been considerable growth in the number of hardened and deeply buried structures, nuclear-capable mobile launchers, dispersed warheads and delivery systems and dual-use missiles, and exploration of launch-on-warning protocols to be utilized in the event of disarming first strikes. Pakistan in particular has pursued a more aggressive nuclear posture aimed in part at deterring a preemptive strike on its nuclear facilities. These postures threaten to increase the risk of nuclear escalation during limited conventional conflicts. The primary intent of most of these efforts is to increase the survivability of nuclear capabilities against conventional attack. These measures threaten to eliminate any reasonable chance of a disarming first strike, and may greatly increase the risks of U.S. military operations more generally.¹¹

For countries with small and vulnerable nuclear arsenals, survivability is a central component of nuclear deterrence, and in some cases is more important than the quantity or yield of nuclear warheads.¹² Even a relatively large nuclear arsenal has little deterrent value if a regime cannot demonstrate a credible second-strike capability. The ability to survive a disarming first strike and then launch nuclear weapons (even if the warheads are relatively small and few in number) is arguably the most important component of a robust - i.e., credible - nuclear deterrent.¹³

¹¹ Ibid.

¹² Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics*, 2012.

¹³ Relatively new nuclear powers such as North Korea or Pakistan may have different perspectives on what constitutes a survivable nuclear deterrent - for example, does the ability to launch just one or a few lower-yield or shorter-range nuclear missiles following a disarming first strike constitute a survivable deterrent, or does a credible nuclear deterrent require something more. These perspectives will likely influence requirements for nuclear material and

Nuclear dynamics embedded in complex regional conflicts

Many of the dynamics between nuclear-armed states in the second nuclear age are embedded in regional and even local conflicts – a far cry from the confrontation between global powers during the Cold War. These conflicts are over a wide variety of complex issues connected to the international system in different ways. Regional states vary widely in terms of military capabilities and strategic postures, each requiring a different set of potential responses and capabilities.¹⁴ Changes in the nuclear capabilities or posture of one country can have cascading effects across a range of countries in different regions as a result of interconnected and overlapping strategic relationships.

In confrontations with the United States, regional powers often have more at stake in the issues they are fighting over. In a contest of resolve, that gives them considerable advantage. In the past, the United States has had great difficulty compelling determined adversaries to back down in disputes over regional issues. Many of these countries are revisionist powers that appear willing to go to extraordinary lengths to seize disputed territories, prosecute limited wars, and provoke potentially escalatory crises, calculating that decision-makers in Washington would not be willing to risk nuclear conflict over issues that are not of existential importance to the United States.

Recent research on nuclear weapons and coercion

Since the end of the Cold War, there have been a limited number of empirical studies on the question of nuclear weapons and coercion among smaller nuclear powers. These studies focus on the relationship between the acquisition of nuclear weapons and the leverage that these weapons provide in regional crises, based on concrete examples. This research builds on a large body of literature dating back to the Cold War on the role of nuclear weapons in coercive diplomacy, while taking into account the ways in which deterrence has changed with the proliferation of strategic weapons and delivery systems. These studies include a number of key insights into the sorts of challenges the United States is likely to face in the future as regional adversaries

associated capabilities, may be subject to change over time, and will depend on conditions such as range to strategic targets.

¹⁴ Tellis, “No Escape: Managing the Enduring Reality of Nuclear Weapons,” 2013, 24.

acquire nuclear weapons and seek to leverage these capabilities in international crises.

Coercion by nuclear powers takes the form of controlled escalation

Experts on nuclear deterrence are nearly unanimous in the view that conflict among nuclear powers is dominated by controlled escalation, involving implicit threats of nuclear use if certain red lines are crossed. A nuclear-armed adversary may engage in provocations and even limited military strikes against the United States or its allies, but at the same time seek to control the level of escalation.¹⁵ Coercion under the shadow of nuclear weapons is largely about brinkmanship and the manipulation of risk through actions short of war. Overt coercive threats of nuclear attack intended to compel, rather than to deter, an attack are extremely rare.¹⁶

The critical factor determining the outcome of crises between nuclear powers is the degree of risk each side is willing to take that the conflict could rise to the nuclear level and the extent to which each side effectively communicates its resolve to take these risks. The power seeking to coerce attempts to bend the other to its will through the implied threat of escalation. The “balance of resolve” – an intangible quality that is impossible to know with certainty – could be more important than actual military capabilities.¹⁷ Recent research on nuclear deterrence suggests that the potential use of nuclear weapons can influence crisis outcomes even without explicit threats of nuclear use.¹⁸

Nuclear weapons promise leverage to smaller powers

There is some debate among researchers over whether and to what extent nuclear weapons make coercive threats more credible – i.e., whether nuclear capabilities lend a country (particularly smaller powers) greater leverage in international crises. Some analysts argue that nuclear weapons enable revisionist powers to intentionally provoke crises and create the threat of nuclear escalation in order to force their larger status quo rivals (particularly the United States) to back down over regional or

¹⁵ Victor A. Utgoff and Michael O. Wheeler. *On Deterring and Defeating Attempts to Exploit a Nuclear Theory of Victory*. Institute for Defense Analyses 2013.

¹⁶ Todd S. Sechser and Matthew Fuhrmann, "The Coercive Limits of Nuclear Weapons," ed. University of Virginia(Unpublished paper2011), 5. Daniel S. Geller. "Nuclear Weapons, Deterrence and Crisis Escalation." *Journal of Conflict Resolution* 34 (1990).

¹⁷ "Nuclear Weapons, Deterrence and Crisis Escalation," 1990.

¹⁸ Sechser and Fuhrmann, "The Coercive Limits of Nuclear Weapons."

local issues.¹⁹ On the other hand, recent empirical research by Todd Sechser and Matthew Fuhrmann suggests that acquisition of nuclear weapons lends little in the way of actual leverage in military confrontations. Threats to use nuclear weapons may not be credible for anything less than deterrence of major war; no country would detonate a nuclear device against another nuclear power unless its existence was threatened.²⁰

A prevalent view, especially among hawkish policy-makers concerned about the Iranian and North Korean nuclear programs, is that nuclear weapons will give these countries considerably greater bargaining power in regional confrontations and cause them to become more assertive, in an effort to push their advantage – particularly against their neighbors.²¹ Nuclear brinkmanship tends to lend an advantage to countries with a high tolerance for risk, regardless of the military balance. The United States would be considerably more constrained in its ability to credibly threaten dire consequences in response to aggression against its allies and partners. The potential costs of a nuclear exchange would be too great for the United States or its allies to risk a confrontation that could escalate to the nuclear level.

By effectively taking major combat operations and regime change off the table, the United States would have fewer options. This would lend considerable advantage to states such as Iran or North Korea that might otherwise act with restraint in the face of credible threats of large-scale conventional strikes by the United States or its allies. The fact that nuclear-armed adversaries are likely to have more at stake in regional issues than the United States may lend additional leverage in a crisis involving the implied threat of nuclear use. Decision-makers in Washington may not be willing to risk escalation over issues that are peripheral to U.S. interests.²²

Going against the conventional wisdom, Sechser and Fuhrmann find that nuclear weapons give regional powers little or no leverage. Analysis of international crises since the advent of nuclear weapons in the 1940s suggests that nuclear-armed states are not more likely to achieve their aims. Countries at the receiving end of coercive threats by nuclear-armed adversaries tend to resist, even in the face of serious

¹⁹ Kyle Beardsley and Victor Asal. "Winning with the Bomb." *Journal of Conflict Resolution* 53 (2009): 278-279.

²⁰ Sechser and Fuhrmann, "The Coercive Limits of Nuclear Weapons," 1. Geller, "Nuclear Weapons, Deterrence and Crisis Escalation," 1990.

²¹ Beardsley and Asal, "Winning with the Bomb," 2009.

²² Utgoff and Wheeler, *On Deterring and Defeating Attempts to Exploit a Nuclear Theory of Victory*, 2013, 23. Joshua Rovner. "After Proliferation: Deterrence Theory and Emerging Nuclear Powers." In *Strategy in the Second Nuclear Age: Power, Ambition, and the Ultimate Weapon*, Edited by Toshi Yoshihara, and James R. Holmes. Washington D.C.: Georgetown University Press 2012.

escalation. Powers with revisionist intentions have a greater tendency to engage in acts of coercion after acquiring nuclear weapons, but they rarely achieve any useful concessions.²³

Nuclear weapons deter war at the high end but not the low end

There is widespread agreement that nuclear weapons have been effective at deterring major war – between both minor and second-tier major powers. There has never been a major war between nuclear-armed states. Nuclear weapons have been far less effective, however, at preventing limited and low-level military confrontations. As more countries have acquired nuclear weapons, they have come to realize that threats of nuclear use are not credible against small-scale attacks. They have also learned that a robust nuclear deterrent provides protection against the possibility of invasion and regime change, creating potential freedom of maneuver to engage in acts of aggression as long as they do not cross the red lines of larger powers.²⁴

While the likelihood of major war may dissipate with the proliferation of nuclear weapons, limited wars and provocations are likely to continue and perhaps increase. By taking the possibility of major war off the table, nuclear weapons may create space for additional options at the lower ends of the warfare spectrum. The proliferation of nuclear weapons appears to be pushing warfare down into the lower levels of escalation – into the realm of provocations, proxy warfare, and localized conflict. Indian and Pakistani forces have faced off in limited conflicts and repeatedly exchanged fire over their disputed border since the two countries tested nuclear devices in 1998. North Korea has engaged in repeated provocations against South Korea and the United States since it tested its first nuclear device in 2006.

Research suggests that possession of nuclear weapons may actually enable confrontations at the lower ends of the warfare spectrum.²⁵ Among nuclear powers, the use of coercive tactics short of war – such as displays of force, small-scale attacks, and proxy warfare – is actually more prevalent than it is among countries that rely on conventional deterrence alone. In one study of inter-state disputes going back to 1946, researchers found that nuclear powers have a greater tendency to escalate during international crises and to explore a wider range of coercive tactics short of war.²⁶ New nuclear powers will seek to leverage their nuclear deterrent to

²³ Sechser and Fuhrmann, "The Coercive Limits of Nuclear Weapons."

²⁴ Rovner, "After Proliferation: Deterrence Theory and Emerging Nuclear Powers," 2012, 18.

²⁵ Geller, "Nuclear Weapons, Deterrence and Crisis Escalation," 1990.

²⁶ Ibid.

enable aggressive action. This may be particularly true of weaker states that face stronger rivals.²⁷

Smaller powers face incentives to escalate rapidly to nuclear threats

In the event that escalation spirals out of control and the United States or its allies launch major combat operations, it is likely that a nuclear-armed adversary would quickly raise the ante further by threatening limited nuclear strikes. The same is likely to be true for smaller nuclear powers engaged in confrontations with larger rivals – for example, Pakistan in a war with India or Russia in a conflict with China. Recent research by Victor Utgoff suggests that a growing number of countries, many of them smaller powers concerned about rapid defeat in a conventional conflict, are considering the possibility of fighting (and possibly winning) a limited nuclear war.²⁸

Regimes that rely on their nuclear deterrent to counter the superior conventional capabilities of larger rivals are likely to threaten nuclear strikes – including first use of nuclear weapons – in the event of actual hostilities.²⁹ There is a strong incentive for the weaker side to quickly cross the nuclear threshold in order to forestall rapid defeat in a conventional war. This was, in part, the U.S. nuclear posture in Europe during much of the Cold War when Soviet conventional forces far outmatched those of the United States.³⁰ It was also a cornerstone of French nuclear doctrine until recently.³¹

Nuclear use (or the threat of nuclear use) is likely to take the form of limited strikes aimed at forcing a stop to a U.S. invasion or other major conventional operations such as air attacks that threaten the viability of the regime or its capability to defend itself.³² If it comes to nuclear war, adversaries are likely to attempt to keep the

²⁷ Lieber and Press, *Coercive Nuclear Campaigns in the 21st Century: Understanding Adversary Incentives and Options for Nuclear Escalation*, 2013.

²⁸ Utgoff and Wheeler, *On Deterring and Defeating Attempts to Exploit a Nuclear Theory of Victory*, 2013.

²⁹ Lieber and Press, *Coercive Nuclear Campaigns in the 21st Century: Understanding Adversary Incentives and Options for Nuclear Escalation*, 2013, 2.

³⁰ David O. Smith. “The US Experience With Tactical Nuclear Weapons: Lessons for South Asia.” In *Deterrence Stability and Escalation Control in South Asia* Edited by Michael Krepon, and Julia Thompson. Washington D.C.: The Stimson Center 2013, 68-74.

³¹ Olivier Debouzy. “French Nuclear Deterrence Doctrine: An Aggiornamento.” *European Affairs* 7 (2006).

³² Lieber and Press, *Coercive Nuclear Campaigns in the 21st Century: Understanding Adversary Incentives and Options for Nuclear Escalation*, 2013.

exchange calibrated. This implies that nuclear powers with limited conventional capabilities may explore discriminate and calibrated strike options just above the nuclear threshold that promise to deter or stop major combat operations while minimizing the risk of massive retaliation.

The implication is that, while the spread of nuclear weapons makes major combat operations less likely, it may increase the likelihood of limited nuclear attacks in the event that a war does break out. In the future, conventional conflict is likely to be relegated to the lower ends of the warfare spectrum, with the potential for rapid escalation to limited nuclear strikes. Major (conventional) combat operations against a second-tier nuclear power such as North Korea are likely to be very brief if they occur at all, given the strong incentives for the weaker side to escalate quickly to the nuclear level in the event of a major war.

What we should expect to see in the cases of North Korea and Pakistan

Given existing theory on coercion and nuclear weapons in the second nuclear age, what should we expect to observe when we examine the cases of North Korea and Pakistan? The survey of the theoretical literature above suggests that the problem is largely one of weaker powers with newly acquired nuclear capabilities intentionally provoking crises through low-level attacks, while counting on their possession of nuclear weapons to deter major retaliation – in order to leverage the risk of escalation to nuclear conflict to extract concessions. This leads us to two sets of empirically testable hypotheses.

Hypothesis 1: Nuclear-armed regional powers such as North Korea and Pakistan will seek to coerce their more powerful rivals, including U.S. allies and partners, by intentionally provoking and escalating crises in a controlled fashion. Their aim will be to signal superior resolve through brinkmanship and the manipulation of risk. They will seek to do so through a variety of methods, such as provocations, localized military operations of a limited nature, and proxy warfare.

Hypothesis 2: Nuclear-armed adversaries will pursue capabilities to launch limited nuclear strikes in the event that a crisis escalates to major war or disarming preemptive strikes, while seeking to control follow-on escalation and reduce the chance of massive retaliation.

In the next two chapters, we will examine these hypotheses in light of available evidence on North Korea and Pakistan.

North Korea

In this section, we subject the above hypotheses to critical scrutiny. Does what we know about North Korea's nuclear capabilities, strategic thinking, and overall nuclear posture suggest that the regime will engage in acts of coercion in the coming years? If so, what forms might this coercion take? We look at available sources on North Korean nuclear capabilities and delivery options, as well as strategic and operational-level thinking on nuclear weapons. Then, we examine two key provocations by North Korea in 2010 that occurred not long after the country's second nuclear test in 2009: the sinking of a South Korean Navy warship in March 2010, and artillery strikes on South Korean marines in November 2010. Finally, we examine subsequent changes to South Korea's military posture following the 2010 provocations and their potential effect on North Korea's calculus.

Nuclear capabilities

North Korea's nuclear capabilities remain at an early stage of development. It is estimated that the country has fewer than 12 (likely 5-8) nuclear devices of relatively low yield and sophistication.³³ It has a substantial arsenal of short- and medium-range missiles that may be capable of carrying nuclear warheads, and is in the process of building a long-range missile capable of reaching the western United States. However, it is not clear whether North Korea has the capability to miniaturize nuclear warheads for emplacement on these missiles, or whether it will manage to acquire such a capability in the near future.³⁴

³³ John S. Park. "Nuclear Ambition and Tension on the Korean Peninsula." In *Strategic Asia 2013-14: Asia in the Second Nuclear Age*. Edited by Ashley J. Tellis, Abraham M. Denmark, and Travis Tanner. Seattle, WA and Washington, D.C. : The National Bureau of Asian Research 2013, 180. Mary Beth Nikitin. *North Korea's Nuclear Weapons: Technical Issues*. Congressional Research Service 2013. The precise number is not known, at least publicly. Most estimates are based on the amount of fissile material North Korea is believed to have, which in turn is based on the likely production capacity of its nuclear reactors as well as its enrichment capacity.

³⁴ *North Korea's Nuclear Weapons: Technical Issues*, 2013; Interviews in Seoul, South Korea with defense analysts and officials at U.S. Forces Korea, March 2014. Publicly available reports and official U.S. statements indicate that North Korea probably does not have this capability, but the U.S. intelligence community is not certain on this point. An apparently obscure Defense

By most accounts, the regime remains at least several years away from a survivable second-strike capability, the key element of a robust nuclear deterrent. What exactly constitutes a survivable capability, and at what point North Korean leaders might come to believe their arsenal is survivable, are open questions. The North Korean military lacks a robust nuclear command-and-control and communications system based on established nuclear doctrine that could be relied on to survive precision bombing.³⁵ If North Korea were to succeed in eventually developing a survivable deterrent, especially one that included long-range nuclear missiles capable of reaching the United States, its overall posture could change substantially.³⁶

The regime appears to be aware that its arsenal is small and vulnerable to preemptive attack, and has therefore placed heavy emphasis on improving the survivability of its nuclear materials and delivery systems through various measures, such as deploying missiles on road-mobile launchers, building concealed and hardened storage sites deep underground, and dispersing weapons and launch sites. North Korea is in the early stages of developing a basic submarine launch capability.³⁷ These measures present serious tradeoffs between survivability and the security of nuclear materials, particularly in a crisis. The regime's high level of centralization and rigid command structure place considerable limitations on the degree to which weapons can be dispersed and mobile and still be secure and effective without the benefit of high-end technology. North Korea is a totalitarian state where the political head of state, Kim Jong-un, most likely personally controls the nuclear program and decisions associated with the employment of nuclear-capable systems.

Effective dispersal during a crisis would require either some delegation to subordinate military commanders, which is unlikely in the current regime, or employment of relatively advanced technical controls such as permissive action links (PALs) and centrally held launch codes. It is not clear whether the regime is capable of developing or acquiring such technologies. In the absence of secure technical controls, North Korea could keep nuclear warheads and missiles separate and under the control of different organizations until an order to launch has been given – an

Intelligence Agency (DIA) report discussed in an open congressional hearing in 2013 reportedly suggested that North Korea may have the capability to put a warhead on a missile. The report was later discounted by intelligence officials. Mark Hosenball and David Alexander. "Speculative' Pentagon Report on North Korea's Nuclear Missile Capability Sparks Fear As Officials Urge Skepticism." *Reuters*. 08 May 2014.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Roehrig, "North Korea's Nuclear Program," 2013, 93. Andrew Scobell and John M. Sanford. *North Korea's Military Threat: Pyongyang's Conventional Forces, Weapons of Mass Destruction, and Ballistic Missiles* Strategic Studies Institute 2007, 116.

approach Pakistan has apparently adopted. Nuclear warheads and missiles could, at least theoretically, be dispersed separately during a crisis and remain survivable while minimizing threats of theft or unauthorized launch. This is little more than speculation, however, given how little is known about the command and control of North Korea's small nuclear arsenal.³⁸

It is unclear how far North Korea intends to go towards development of its nuclear capability – i.e., how many warheads and missiles of different ranges and yields, how many additional delivery mechanisms such as aircraft and surface and sub-surface ships, what level of readiness, and how much operationalized capability it aims to pursue. North Korea could follow Pakistan's lead – that is, begin with a minimum deterrent posture and develop a more offense-oriented and fully operationalized nuclear posture over time as additional capabilities become available. In December 2010, there were reports from North Korean dissidents that the regime was in the early stages of developing offense-oriented tactical nuclear weapons – in particular, nuclear torpedoes and sea mines for use against U.S. and South Korean warships and naval bases.³⁹ It is equally possible, however, that North Korea could maintain a minimum deterrent posture more akin to China's in the 1980s and 1990s. The regime might conclude that just a few warheads are sufficient, and that a more offense-oriented and operationalized posture is not necessary.

In addition to an incipient nuclear weapons program, North Korea is estimated to have more than 10,000 artillery batteries and guided rocket systems, many of them within range of Seoul and nearby U.S. military bases – in addition to at least 500 conventionally armed ballistic missiles. Through these conventional weapons alone, the regime could destroy much of Seoul and inflict as many as one million civilian casualties by some estimates.⁴⁰ In addition to long-range artillery, North Korea has a substantial chemical weapons capability deliverable via short-range Scud missiles or long-range artillery. It is unclear how significant these weapons are in North Korea's defense planning. It appears that they could, at the very least, be used in combination with long-range artillery or conventional missiles.⁴¹

³⁸ Interviews in Seoul, South Korea with defense analysts and officials at U.S. Forces Korea, March 2014.

³⁹ Ted Parsons. "North Korea Developing Nuclear Sea Mines and Torpedoes, say Dissident Sources." *IHS Jane's*. 03 December 2010.

⁴⁰ Scobell and Sanford, *North Korea's Military Threat: Pyongyang's Conventional Forces, Weapons of Mass Destruction, and Ballistic Missiles* 2007.

⁴¹ Joseph S. Bermudez, "North Korea's Chemical Warfare Capabilities," *38 North*, (2013); *Military and Security Developments Involving the Democratic People's Republic of Korea*. Office of the Secretary of Defense Annual Report to Congress 2012.

These capabilities serve as a formidable non-nuclear deterrent nearly approaching nuclear weapons in their potential strategic significance. Most analysts agree that much of Seoul could be destroyed in a short period of time. North Korea's long-range artillery capability would be relatively survivable, at least for long enough to cause large numbers of civilian casualties and cause far-reaching damage to the South Korean economy and urban infrastructure, given that many artillery batteries are located in tunnels and hardened structures, while others are hidden and dispersed.⁴²

Given the strength of North Korea's conventional deterrent, it is likely that the regime views its nuclear weapons as adding a layer of defense and a greater degree of credibility. A nuclear deterrent is more unequivocally strategic in nature and promises to do far greater damage. Perhaps more importantly, the regime's nuclear weapons program promises to one day provide a strategic deterrent against the United States, in the form of a nuclear-capable long-range missile that can reach the western part of the country.

Nuclear strategy and doctrine

There is little reliable information on the strategic thinking and nuclear doctrine of the North Korean regime. Official statements are vague and couched in inflammatory rhetoric. The regime has little in terms of a declared nuclear posture. Even less is known about North Korean nuclear doctrine and concepts of operation. There is considerable uncertainty whether Pyongyang intends to pursue a largely defensive doctrine based on minimum deterrence or whether it will seek more offensive capabilities over time and attempt to leverage its nuclear capability to engage in coercive actions against the United States and South Korea.

North Korea's conventional forces have deteriorated considerably in relative terms since the end of the Cold War. Pyongyang retained the core of its conventional deterrent against South Korea, in the form of artillery aimed at Seoul, while other forces atrophied, particularly the army. In the mid-1990s, North Korea embarked on an "unconventional-asymmetric strategy" aimed at compensating for this decline. Nuclear weapons played a central role in this new strategy. North Korea's military strategy appears to be changing from one focused on a major land war and invasion force towards one that combines small-scale, possibly covert actions, with nuclear weapons aimed at deterring retaliation by the United States or South Korea.⁴³

⁴² Scobell and Sanford, *North Korea's Military Threat: Pyongyang's Conventional Forces, Weapons of Mass Destruction, and Ballistic Missiles* 2007, 63-64.

⁴³ *Military and Security Developments Involving the Democratic People's Republic of Korea*, 2012.

Close reading of the literature on North Korea, as well as public statements by the country's leaders, suggests that Pyongyang views nuclear weapons primarily as a means to ensure the survival of the regime, particularly against the threat of attack by the United States and South Korea.⁴⁴ North Korea has also leveraged its nuclear program to extract concessions from the international community and as a source of prestige.

Analysis of North Korean media statements suggests that leaders in Pyongyang believe that the United States would not attack a country with viable nuclear capabilities. North Korean leaders have paid close attention to U.S. military campaigns around the world. One lesson they appear to have learned is that for countries such as Libya, which gave up its nuclear program, or Iraq, which failed to secure a nuclear capability, the U.S. conventional threat is real.

Following the 2003 invasion of Iraq, North Korean leaders for the first time began using the term “nuclear deterrent force.” The first use of the term was in reference to the threat from “state of the art weapons,” likely a reference to U.S. precision strike capabilities.⁴⁵ When Kim Jong-il died in 2011, his legacy was tied to the nuclear program. This added a political component to the program that made it an inviolable part of the regime. In 2013 (two months after the third nuclear test in February), the regime inserted language into the constitution defining North Korea as “a full-fledged nuclear weapons state capable of beating back any aggressor troops at one strike.”⁴⁶

It is unclear whether North Korean leaders believe they have sufficient capability to launch a nuclear strike, even on a small scale – despite the regime’s aggressive rhetoric. It appears likely that North Korean leaders look on their nuclear capability at the present time as a “virtual” deterrent – i.e., possession of a basic nuclear device but not a robust survivable strike capability. In their view, this limited capability could be sufficient, at least for some time. Much will depend on how much pressure the United States places on Pyongyang.

⁴⁴ Park, “Nuclear Ambition and Tension on the Korean Peninsula,” 2013, 185. “Annual Threat Assessment of the Director of National Intelligence for the Senate Select Committee on Intelligence.” (2012).

⁴⁵ In May 2003, less than two weeks after the end of major combat operations in Iraq, Pyongyang issued the following statement: “The bloody lesson of the war in Iraq for the world is that only when a country has physical deterrent forces and massive military deterrent forces that are capable of overwhelmingly defeating any attack by state of the art weapons, can it prevent war and defend its independence and national security.” Quoted in Joseph S. Bermudez. “KPA Lessons Learned from Foreign Conflicts 1960-Present, Part II.” *KPA Journal* 1 (2010): 4. Accessed 08 July 2014

⁴⁶ *Law on Consolidating Position of Nuclear Weapons State Adopted 2013.*

Some have suggested that the United States' tepid response to North Korean provocations in the late 1990s and early 2000s may have led North Korean leaders to conclude that a minimal deterrent, in the form of a very basic nuclear device and limited delivery options, may be sufficient to keep the United States at bay. However, the crisis of March and April 2013, when North Korea began for the first time to talk about nuclear strikes against the United States could have been an indication that North Korea intends to develop a more robust capability.

North Korean leaders appear to believe that, in order to claim a truly credible nuclear deterrent against the United States, they will have to develop the capability to hold U.S. territory at risk. North Korea's efforts to develop long-range ballistic missiles appear to be designed with this end in mind. With only a marginally successful test in December 2012, no credible long-range delivery system has been proven to work. North Korea has also had trouble with its medium-range missiles. If these technical challenges can be overcome, however, North Korean calculus could change profoundly. The KN-08, also known by the names No-dong-C and Hwaseong-13, is a road-mobile intercontinental ballistic missile, which could potentially provide North Korea with the capability to strike the United States. However, the extent to which such a missile would be truly mobile during a crisis, and therefore have a chance of surviving a disarming U.S. strike, is not clear - given how little is known about the country's nuclear command and control system and the regime's ability to operate a dispersed, road-mobile nuclear force while under attack.

The inability to deliver a weapon onto U.S. soil is only one problem standing in the way of North Korea's credible nuclear deterrent. Pyongyang also needs to prove that it can weaponize its nuclear stockpile. This involves producing workable nuclear weapons that can be carried by available delivery systems, particularly a warhead small and light enough to be carried by a long-range missile capable of reaching the United States.

It is unlikely that the North Korean leadership would delegate operational control or launch authority to subordinates. The possible exception to this might be a scenario in which local commanders have been given specific wartime instructions to employ nuclear weapons under certain conditions (e.g., a nuclear attack on North Korea or loss of command authority for a specified period of time). Such a scenario appears unlikely at the current time. It is unlikely that North Korea has yet developed a comprehensive nuclear security system allowing safe dispersal of nuclear weapons on alert while retaining central control over their use.

Red lines probably already exist for nuclear weapons employment (most likely via a low-grade nuclear device) if deterrence should fail.⁴⁷ If the regime believed it was

⁴⁷ There is little available evidence on what type of device North Korea might be able to detonate in the event of a crisis.

under threat, it could resort to first use, such as a strike on a South Korean port delivered by a mini-submarine and special operations forces in order to slow allied preparations for invasion. In the past, the North Korean military and intelligence services have demonstrated the ability to covertly insert small teams of special operations forces into South Korea, Japan, and other countries. Such teams may be able to deliver a small nuclear device. It is not unreasonable to assume that North Korea could attempt to use this threat against U.S. territory, particularly if the regime itself were in immediate danger.⁴⁸

Whether North Korea would resort to counter-force or counter-value strikes is not clear. Presumably, the regime would focus on military targets, but lack of technology, particularly precision weapons, may preclude this option. If the regime is collapsing, there is the potential for full use of its nuclear arsenal against all targets on the peninsula – regionally, and further afield (i.e., against the United States) since the regime would have nothing to lose.

Examples of military crises triggered by attacks attributed to North Korea

In order to better understand the relationship between North Korea's burgeoning nuclear deterrent and low-level attacks against South Korea, we examine two examples of military crises triggered by attacks attributed to North Korea. These were violent provocations that took place in 2010: the sinking of *Cheonan* and the shelling of Yeonpyeong Island. We then examine South Korea's more offense-oriented "proactive deterrence" strategy, which was created in response to the *Cheonan* sinking and operationalized following the shelling of Yeonpyeong Island. The section concludes with an examination of North Korea's provocations since 2010. In particular, we look at North Korea's responses to joint U.S.-South Korean military exercises in 2013 and 2014.

Sinking of a South Korean Navy warship in March 2010

On 26 March 2010, a North Korean submarine allegedly torpedoed a 1,200-ton South Korean gunboat in contested waters near the disputed Northern Limit Line (NLL), causing the ship to sink. The attack was a covert operation denied by Pyongyang. Multinational investigations of the incident concluded that North Korea launched the

⁴⁸ Ken E. Gause. "A Maritime Perspective on North Korean WMD." In *The Republic of Korea's Security & Role of the ROK-US Navies*. Seoul, South Korea Korea Institute of Maritime Strategy 2011.

attack.⁴⁹ Immediately after the sinking, North Korean forces reportedly prepared for retaliation by raising readiness levels and moving surface-to-air missiles. Concerned about the risk of escalation and adhering to an existing policy of restraint, U.S. and South Korean forces did not respond militarily.⁵⁰

The sinking of *Cheonan* served several North Korean objectives. It fit within Pyongyang's long-standing campaign to force South Korea to accept a shift in the NLL farther south. The current location of the line allows South Korean naval vessels to sail near North Korea's western coast, close to a number of important military installations. The region is also rich in fish stocks coveted by the north. Prior to the sinking of *Cheonan*, Pyongyang had issued numerous statements questioning the sanctity of the NLL and threatening to take action.⁵¹ The line and several islands in the vicinity remain disputed by North Korea; there has been no permanent peace treaty or recognition of maritime borders between North and South Korea. Before the *Cheonan* sinking, there had been numerous prior clashes near the NLL - most notably in 1999, 2002, 2004, and 2009.⁵²

This provocation appears to have taken place in the midst of unfolding turmoil within the regime.⁵³ In the spring of 2010, North Korea's leader Kim Jong-il was faced with a disastrous currency revaluation that threatened to jeopardize the peaceful transfer of power to his successor. He also had a high command that was unhappy about lost largess (because of the currency revaluation's impact on hard currency gains) and about the loss of a ship in a November 2009 confrontation with the South Korean Navy. These factors created a strong incentive for Kim Jong-il to foment a crisis, in order to consolidate his power without provoking a war with South Korea or the United States.

In the aftermath of the sinking, North Korea evidently prepared for retaliation and issued warnings of a "physical response" in the event of an attack from the South. On the surface, this statement appeared to be a threat to use nuclear weapons if the United States or South Korea were to respond militarily. Yet, the fact that the strategic message came from the Foreign Ministry vice the National Defense Commission suggested that Pyongyang may have been indicating plans for a third

⁴⁹ "North Korean Torpedo' Sank South's Navy Ship - Report." 20 May 2010.

⁵⁰ Ken E. Gause. *North Korean Calculus in the Maritime Environment: Covert Versus Overt Provocations*. CNA COP-2013-U-005210-Final. 2013, 15-16.

⁵¹ Ibid., 13-18.

⁵² Ibid. See also Hannah Fischer. *North Korean Provocative Actions, 1950-2007* Congressional Research Service 2007, 11-12.

⁵³ Gause, *North Korean Calculus in the Maritime Environment: Covert Versus Overt Provocations*, 2013, 29-31.

nuclear test. Pyongyang may have simply taken a calculated risk and waited to see what South Korea's response would be, calculating that Seoul would not react militarily.

As it turned out, Seoul and Washington acted with restraint and refrained from any significant military action. According to a number of observers, the lack of a firm military response may have sent the message to Pyongyang that nuclear deterrence works, and that attacks such as the sinking of the *Cheonan* could be carried out without fear of major retaliation.⁵⁴ In the words of one expert: "North Korea most likely learned that its attempt to escalate aggression against the South was successful and that there was still a margin for even further escalation."⁵⁵

Artillery strikes on South Korean marines in November 2010

On 23 November 2010, North Korean artillery batteries opened fire on South Korean marines on Yeonpyeong Island, which is controlled by South Korea but claimed by Pyongyang. The marines were firing artillery into disputed waters near the Northern Limit Line as part of a live-fire multinational exercise aimed at improving capabilities against North Korea. Pyongyang issued repeated warnings demanding that the firing cease immediately. The regime put its coastal defense units on alert and moved several long-range artillery units into position before opening fire on South Korean Marine positions on the island.⁵⁶ The attack consisted of two artillery barrages within the span of an hour, involving approximately 170 rounds. Two South Korean marines and two civilians were killed in the attack, and another 15 marines and three civilians were wounded.⁵⁷

In the midst of the attack, South Korean marines launched counter-battery fire on North Korean artillery positions believed to be involved in the assault. At the same time, the South Korean Air Force launched fighter aircraft under presidential orders to engage North Korean artillery positions, as well as North Korean fighter planes en route, in the event of a third artillery barrage. South Korea's president threatened

⁵⁴ This is a prevalent view among a number of South Korean strategic analysts. See See-Won Byun. *North Korea's Provocations and their Impact on Northeast Asian Regional Security* Center for U.S. - Korea Policy 2010

⁵⁵ Kim Jimbo. "Did Deterrence Against North Korea Fail in 2010?" *CUSKP Newsletter* (2011).

⁵⁶ Joseph S. Bermudez. *The Yōnp'yōng-do Incident*. 38 North Special Report 11-1 2011, 6.

⁵⁷ James Hardy. "Tensions Rise as North Korean Artillery Attacks South Korean Island." *IHS Jane's*. 23 Nov 2010.

“strenuous retaliation” in the event of a third assault. Ultimately, there was no third barrage and the South Korean aircraft did not engage North Korean forces.⁵⁸

Unlike the sinking of *Cheonan* eight months earlier, the shelling of Yeonpyeong had clear strategic aims. Before launching the assault, Pyongyang issued repeated warnings about the firing of artillery into its territorial waters. The regime clearly intended to coerce the South Korean leadership into ordering its marines to cease fire. To some extent, this effort succeeded, as the marines on Yeonpyeong did not continue with their live-fire exercise following the assault. North Korea may also have intended to deter future live-fire exercises in the vicinity of the NLL. Soon after the incident, South Korea cancelled a series of prescheduled artillery exercises on the island. It is less likely that internal dynamics played a role in the decision to shell the island, as the attack occurred during a period of relative stability in Pyongyang. The overt nature of the incident, combined with clear warnings ahead of time, suggest that the attack had a mainly strategic rationale.⁵⁹

The threat of nuclear use did not appear to play an overt role in the crisis. Rather than issuing veiled nuclear threats through reference to its nuclear deterrent, Pyongyang refrained from further artillery fire, and the crisis was diffused. However, North Korea’s incipient nuclear capability may have played a role in the background. In the lead-up to the attack in October the regime unleashed a barrage of statements once again highlighting its nuclear prowess. Media coverage of the 65th anniversary of the Party’s founding of the armed forces focused on two larger missile systems, displaying them along with shorter-range systems and other military equipment, implying that they were operational.

The regime intimated that it possessed the ability to deliver nuclear strikes. In his keynote speech, Army Chief of Staff Ri Yong-ho warned that the army would employ its “self-defensive nuclear deterrent” in a “merciless retaliatory strike” if the regime’s “sovereignty and dignity” were threatened. These statements came weeks after the Third Party Conference and the unveiling of Kim Jong-un as the heir apparent. Days before the artillery strikes on the disputed islands, North Korea revealed the existence of a new uranium enrichment facility. The government in Seoul responded by publicly asking the United States to redeploy tactical nuclear weapons in South Korea.⁶⁰

⁵⁸ Bermudez, *The Yōnp'yōng-do Incident*, 2011, 7.

⁵⁹ Gause, *North Korean Calculus in the Maritime Environment: Covert Versus Overt Provocations*, 2013, 16.

⁶⁰ Allison Puccioni, James Hardy, and Sarah McDowell. “Yeonpyeong attack may be linked to North Korean nuclear revelations.” *IHS Jane's*. 25 Nov 2010.

South Korea's response to these attacks

Soon after the attacks of 2010, South Korea began to develop a more forward-leaning defense posture aimed at deterring small-scale attacks by the North. Known as “proactive deterrence,” the new set of policies and doctrines enabled the South Korean military to carry out limited offensive actions in a timely manner, in order to respond to attacks when they occur and to send a clear signal to Pyongyang that any future attack would have serious consequences.⁶¹

The new defense plan streamlines command and control at the higher echelons of the military and forces greater jointness between the services through an empowered Joint Chiefs of Staff. The plan also streamlines command and control in the South Korean Air Force and gives its leadership full operational control over aircraft during wartime.⁶² The reforms include changes to rules of engagement, enabling South Korean forces to respond more quickly and aggressively in the event of an attack.⁶³

The changes to South Korea's defense posture evolved out of a growing consensus among the country's leaders that traditionally defensive policies based on restraint had failed to deter Pyongyang from engaging in violent acts of aggression at the lower ends of the warfare spectrum. Earlier approaches focused on deterring large-scale aggression were seen as ineffective against low-level attacks, as were relatively passive efforts at “deterrence by denial” aimed at containing North Korean provocations and preventing escalation. In particular, the lack of response to the sinking of *Cheonan* was believed by many to have encouraged the artillery strikes later that year.⁶⁴ South Korea's president was quoted as saying: “The South Korean people now unequivocally understand that prolonged endurance and tolerance will spawn nothing but more serious provocations.”⁶⁵

⁶¹ Abraham Denmark. *Proactive Deterrence: The Challenges of Escalation Control on the Korean Peninsula*. 2011, 1-2. Gause, *North Korean Calculus in the Maritime Environment: Covert Versus Overt Provocations*, 2013, 42-43.

⁶² Rhee Sang-Woo. *From Defense to Deterrence: The Core of Defense Reform Plan 307*. Center for Strategic and International Studies 2011.

⁶³ “South Korea's Military Reform In the Aftermath of the Cheonan Incident.” In *Deterrence and Dialogue- The Korean Peninsula after the Cheonan Incident* The National Institute for Defense Studies, Tokyo, Japan 2010, 11. James Hardy and Sebastien Falletti. “RoK defense minister quits as Seoul stiffens rules of engagement.” *IHS Jane's*. 25 November 2010

⁶⁴ Denmark, *Proactive Deterrence: The Challenges of Escalation Control on the Korean Peninsula*, 2011, 1-2. Jimbo, “Did Deterrence Against North Korea Fail in 2010?,” 2011. Gause, *North Korean Calculus in the Maritime Environment: Covert Versus Overt Provocations*, 2013, 40-41.

⁶⁵ James Hardy. “South Korea Takes Hard Line on North's 'Incessant Belligerence'.” *IHS Janes*. 30 Nov 2010.

In the past, both sides had had a shared understanding of escalation, which was driven in large measure by Seoul's largely diplomatic response to North Korean provocations. While there had been tactical exchanges between ships in the vicinity of the NLL, there had been no purposeful and proportionate military operation launched in retaliation. This emphasis on diplomacy gave Pyongyang a sense of assuredness that it could control escalation resulting from its coercive strategy. At the same time, it may have emboldened the North's leadership to take the more aggressive actions it did in 2010 – provocations that brought to the forefront long-standing political divisions among South Koreans over the best policies for dealing with their dangerous neighbor.⁶⁶

The fundamental question facing South Korean leaders was whether a more forceful stance toward North Korea would deter Pyongyang or, on the contrary, enhance the possibility that a crisis would occur. More purposeful (and proportionate) responses by the South and a willingness to respond with forceful retaliation could carry a very real potential for escalation into crisis.⁶⁷ For decades, it was a singular aspect of the Korean standoff that North Korea held a disproportionate number of deterrence cards in its asymmetric ability to threaten Seoul. As for the United States, its calculus with regard to responding to North Korean provocations was grounded in restraint—to restrain South Korean impulses to retaliate and seek international sanctions and condemnation against the North. In both Seoul and Washington, there was an appreciation that tit-for-tat violent exchanges could quickly spiral out of control.

The common understanding that seemed to exist with regard to provocation and escalation changed in 2010 with North Korea's two violent attacks. Following the sinking of the *Cheonan*, South Korean President Lee Myong-bak, in an address to the nation in May 2010, made the following declaration:

From now on, the Republic of Korea will not tolerate any provocative act by the North and will maintain the principle of proactive deterrence. If our territorial waters, airspace or territory are violated, we will immediately exercise our right of self-defense.⁶⁸

⁶⁶ Byun, *North Korea's Provocations and their Impact on Northeast Asian Regional Security* 2010

⁶⁷ Joint Chiefs of Staff spokesman Army Major General Kim Yong-hyun warned on 6 March, "If North Korea carries out provocations that threaten the lives and safety of South Koreans, our military will carry out strong and resolute retaliations." The South Korean statement advised that if provoked by North Korea, the South would attack the North's 'command leadership.' The language indicates the South has a decapitation strategy for dealing with North Korea. These statements appear to be designed to increase the stakes for future North Korean provocations.

⁶⁸ Full text of President Lee Myong-bak's national address, *Yonhap*, 24 May 2010.

Nine months later, after the Yeonpyeong shelling, President Lee again raised the stakes rhetorically by shifting the rules of engagement to a posture of “manifold retaliation” from the former “controlled response.”⁶⁹

In March 2011, the South Korean Ministry of National Defense published a new Defense Reform Plan (DRP) 307, which embodied and expanded the doctrinal changes evident in speeches by the South Korean president since the *Cheonan* incident. Much of this reform was designed to give teeth to a new doctrine for dealing with the North below the level codified in the existing operational plans. The goal of South Korea’s new defense strategy was to send an unambiguous signal that South Korea was ready, willing, and able to respond to any provocation so as to prevent future adventurism by the North. The new doctrine called on the South Korean military to move beyond self-defense and take prompt, focused, and proportional retaliatory actions in order to raise the costs to North Korea of small-scale attacks.

As of the writing of this study, North Korea has not returned to acts of violence as part of its brinkmanship strategy since the provocations of 2010. It has conducted military demonstrations, including two missile tests and a third nuclear test. It has continued to test rockets and artillery at increasing ranges off of its east and west coasts. All of this activity has been accompanied by inflammatory rhetoric that often refers to nuclear weapons.

In March and April 2013, during annual U.S.-South Korean exercises, Pyongyang issued a series of inflammatory statements. A declaration that unilaterally nullified the Armistice Agreement was followed by increasingly fiery rhetoric, including promises to set Seoul ablaze and launch nuclear strikes against the United States. The head of operations for South Korea’s Joint Chiefs of Staff, Major General Kim Yong-hyun, responded by warning that “if North Korea pushes ahead with provocations that would threaten the lives and safety of our citizens, our military will strongly and sternly punish the provocations’ starting point, its supporting forces and command.”⁷⁰ This was Seoul’s first enunciation of a decapitation strategy designed to raise the stakes for Pyongyang. The United States sent two B-52 long-range stealth bombers to fly over South Korea as a show of resolve – the first time

⁶⁹ Michael McDevitt. *Deterring North Korean Provocations*. The Brookings Institution 2011.

⁷⁰ “Seoul Vows ‘Stern’ Response to North Korean Provocation,” *Chosun Ilbo Online*, 07 March 2013. A military source in Seoul clarified Major General Kim’s statement by noting that, “when we refer to command, it usually signifies divisional or corps commanders, but if Seoul comes under attack, the top levels of North Korea’s regime including Kim Jong-un could become targets.”

the nuclear-capable aircraft had ever flown direct from the continental United States to the Korean peninsula.⁷¹

Conclusion

As Kim Jong-un works to consolidate his power in the coming months and years, South Korea and the United States should expect that provocations will continue to be a part of North Korea's strategy for dealing with the outside world. Some have argued that since its second nuclear test in 2009, Pyongyang has become more assertive in its rhetoric and actions and has not softened its revisionist aims against South Korea.⁷²

The country's nuclear weapons appear to be taking on a more prominent role in pursuit of the regime's revisionist aims, mainly as an enabler of small-scale offensive actions.⁷³ Official statements relating to nuclear matters, combined with provocations and hostile rhetoric, suggest that the regime may see its nuclear deterrent as an additional layer of protection behind which to engage in escalatory behavior.

On the other hand, one could argue that the overlap between North Korea's rhetoric on its nuclear deterrent and its belligerent provocations, especially in the West Sea along the Northern Limit Line, makes the cause-and-effect relationship between the two to appear stronger than it actually is. The motivations driving Pyongyang's decision-making and its calculus with regard to escalation may be tied more to politics inside the regime and the confidence that the regime has in its existing conventional deterrent.

Future attempts at coercive escalation by North Korea are likely to vary in degree and kind depending on the internal and external circumstances surrounding each particular event. Given past precedent, provocations intended to spur a crisis are likely to occur near the Northern Limit Line and take the form of challenges to Seoul's claims to waters and islands south of the line. As in the case of the sinking of *Cheonan*, some of these events may have more to do with struggles within the regime than attempts to coerce South Korea or the United States. It is likely that the

⁷¹ Anna Mulrine. "US Stealth Bomber as Messenger: What it Says to China, North Korea." *The Christian Science Monitor*. 28 March 2013

⁷² Roehrig, "North Korea's Nuclear Program," 2013, 95. Park, "Nuclear Ambition and Tension on the Korean Peninsula," 2013, 165.

⁷³ Interviews in Seoul, South Korea with defense analysts and officials at U.S. Forces Korea, March 2014.

North will be prepared for retaliation by South Korean forces and that Pyongyang will take measures to control the level of escalation.

The regime's rationale for its actions is consistent with its past practice of focusing on its complaints about the Northern Limit Line and self-perceived threats from the United States and South Korea. Its movements along the escalatory ladder have remained largely within established boundaries that the regime believes it can control.

South Korean efforts to develop a more offensive military posture and to explore options for proportionate retaliation could push thinking in Pyongyang towards greater caution and restraint in the conduct of its provocations. Whether and to what degree North Korea attempts to engage in coercive escalation over the NLL in the future will depend in large part on South Korea's response to future acts of violence, as well as on dynamics within the regime. It is possible that Pyongyang will continue to test South Korea's new doctrine through low-level acts of violence in order to probe Seoul's appetite for risk.

Evidence from crises in 2010 over the NLL suggest that it may be possible to deter North Korea through more aggressive military responses, and that limited military action could serve to control escalation following a North Korean provocation. As of the drafting of this study, There have been no provocations on the scale of the 2010 events since the Yeonpyeong incident. During the November 2010 crisis, South Korea's scrambling of fighter jets and launching of counter-battery fire appears to have persuaded North Korea to cease fire, bringing the crisis to an end.

North Korea's attempts to coerce the South through intentional escalation were not particularly effective. After the shelling of Yeonpyeong Island, South Korea ceased firing artillery rounds into disputed waters north of the NLL. Seoul also cancelled subsequent artillery drills in the vicinity. Yet, South Korea has not given into the North's demands to reconsider the location of the NLL or its control over islands in the area. Pyongyang's long-term campaign to pressure Seoul into moving the line farther south has not been successful – and, given South Korea's more aggressive stance since 2010, it is not likely to succeed in the future.

The evidence suggests that, though North Korea appears to have a higher tolerance for risk and has acquired some advantage in the "balance of resolve," the regime has gained little in terms of actual concessions. The North Korea case suggests that resolve and the ability to engage in nuclear brinkmanship has not resulted in significant gains for the North during military confrontations on the peninsula.

North Korea's nuclear program has become increasingly important to the regime's survival as its conventional forces have deteriorated and the military balance has

shifted inexorably in favor of the United States and South Korea.⁷⁴ This evolution in thinking on nuclear matters has occurred in the midst of the regime's increased focus on a family of asymmetric strategies, including special operations capabilities, small boats, submarines, and unmanned aerial vehicles.⁷⁵ Emphasis has shifted to nuclear and conventional deterrence, combined with a limited offensive capability at the lower ends of the warfare spectrum. Within this context, nuclear weapons play two roles: one supports the traditional North Korean doctrine by providing a deterrent against regime change (something Pyongyang's leaders do not believe is served by the conventional deterrent alone); and the other supports a brinkmanship strategy where nuclear threats are designed to control escalation.

There is little dispute that Pyongyang aspires to have a nuclear deterrent in order to deter regime change by the United States. However, in order to achieve this goal, the regime would have to overcome three major obstacles: (1) weaponization of its nuclear material, (2) development of a proven delivery capability, and (3) creation of a viable nuclear command-and-control system based on an established nuclear doctrine. At the present time, it is unclear whether North Korea has achieved a low-level nuclear deterrent, one that would be based on its ability to deploy (most likely via ballistic missiles if and when nuclear-capable warheads are developed) a small nuclear device somewhere in the region. Given these limited nuclear capabilities at the current time, North Korea's nuclear deterrent is better seen as notional.

It is highly likely that North Korea will continue to develop its nuclear capability. High-level statements have made it clear that the regime has all but abandoned any thoughts of trading its nuclear program for engagement with the outside world. If anything, the regime has bolstered its claims of a nuclear deterrent to the point that many Pyongyang watchers believe that a fourth nuclear test will occur sometime in the near future. It remains to be seen whether North Korea will follow the path of Pakistan and develop an offense-oriented and operational nuclear capability; follow China, which has retained a largely minimalist nuclear posture; or follow a different path altogether.

North Korea's current calculus with regard to nuclear weapons could change once it develops a proven capability to hold U.S. territory at risk – in other words, as it moves from a notional to a credible nuclear deterrent. In a scenario where North Korea has a more robust and survivable deterrent, backed by nuclear-tipped missiles that can strike the U.S. mainland, as well as other targets in the region, it is conceivable that the regime will reconfigure its provocative profile. North Korea

⁷⁴ "Nuclear Ambition and Tension on the Korean Peninsula," 2013, 162-165.

⁷⁵ Gause, *North Korean Calculus in the Maritime Environment: Covert Versus Overt Provocations*, 2013, 38-48. Defense White Paper 2010 Republic of Korea Ministry of National Defense

might be willing to engage in more aggressive behavior to test the resolve of the United States and South Korea, extract concessions, and limit U.S. power projection.

A viable nuclear capability would give the regime additional tools to potentially influence crisis dynamics at the higher end of the warfare spectrum. The regime (or elements within the regime, such as a hardline military) could push for early use of nuclear weapons in a crisis, in order to forestall an outright invasion and to set the stage for negotiations. This could take the form of a limited nuclear strike or demonstration on the Korean Peninsula, possibly inside North Korea itself - in order to force the United States and South Korea to the negotiating table.

Pakistan

In this section, we examine Pakistan's nuclear capabilities, strategy, and doctrine, as well as its past attempts at coercive escalation. We consider the ways in which Pakistan has engaged in coercive escalation and how effective the regime has been at securing concessions from its larger neighbor India. Finally, we examine India's reaction to Pakistani attacks and Pakistan's subsequent pursuit of limited nuclear options in response. The case of Pakistan promises to shed additional light on the problem of coercive escalation. More than any other country, Pakistan has an established record of engaging in low-level attacks in the shadow of nuclear weapons.

Nuclear capabilities

Information on Pakistan's nuclear weapons industry and potential stockpile is limited due to the considerable secrecy surrounding the country's nuclear program. There is, however, more information on Pakistan's program than there is on North Korea's. Hans M. Kristensen and Robert S. Norris have provided one of the most detailed assessments in the public domain. According to their 2011 study, Pakistan has been steadily expanding its nuclear weapons industry and stockpile of warheads. As of late 2011, Pakistan's estimated inventory consisted of 2,600 kilograms of highly enriched uranium (HEU) and 100 kilograms of weapons-grade plutonium (WGP) – enough to produce roughly 160-240 nuclear warheads.⁷⁶ It is not clear how many warheads Pakistan could operationalize, given its limited delivery systems.⁷⁷

It is estimated that Pakistan has the capacity to produce approximately 120-180 kilograms of HEU per year – enough for 7-15 warheads. Annual weapons-grade plutonium production is probably around 12-24 kilograms, which would be enough for another 3-6 warheads. Taken together, Pakistan's annual production of HEU and WGP could amount to 10-21 warheads annually.⁷⁸ Pakistan has stated plans to add

⁷⁶ Hans M. Kristensen and Robert S. Norris. "Pakistan's nuclear forces, 2011." *Bulletin of Atomic Scientists* 67 (2011): 91.

⁷⁷ Ibid., 92.

⁷⁸ Kristensen and Norris, "Pakistan's nuclear forces, 2011," 2011.

two additional plutonium production reactors in the future. It is unclear when either would be completed; the second is believed to be years away from completion. If or when these two reactors come on line, Pakistan's annual WGP output could double.⁷⁹

Though it likely possesses the fissile material for additional warheads, Pakistan's estimated stockpile as of 2011 was around 90-110 warheads. At its current rate of production, Pakistan could have 150-200 warheads by 2020. Pakistan also has a number of delivery system options, including medium-range ballistic missiles (MRBMs), two new types of short-range ballistic missiles (SRBMs), and two new nuclear-capable cruise missiles. Most of these delivery systems are dual use. It is unclear what percentage of the current stockpile has undergone nuclear weaponization. Further, it is likely that Pakistan has made improvements to its use of plutonium, as well as its miniaturization of warheads to fit smaller delivery vehicles; however, the extent of those improvements is unknown.⁸⁰

Pakistan's rate of growth in these areas has led analysts to suggest that the country may have the fastest-growing nuclear program in the world at the current time. By most accounts, Pakistan's capabilities will continue to grow in the short and medium terms. According to Michael Krepon, at some point this growth could level off if the military comes to believe that it has a sufficiently large arsenal to meet its requirements. However, it is not clear what these requirements are, how they are formulated, or how they might change over time.⁸¹

Pakistan currently has three nuclear-capable ballistic missiles in operation: the short-range Ghaznavi (Hatf-3) and Shaheen-1, and the medium-range Ghauri (Hatf-5). In addition, three others are under development: the medium-range Shaheen-2 (Hatf-6), which could be nearing completion if it is not already operational; the short-range Abdali (Hatf-2), which was successfully tested in March 2011; and the short-range Nasr (Hatf-9). The Nasr which was successfully tested in April 2011, and has been called Pakistan's "most significant recent missile development."⁸² It is a multi-tube, tactical weapon, with a 60-kilometer range, and was developed as a quick response system. Many of these missiles are dual-use, capable of delivering nuclear or conventional warheads.⁸³

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ Michael Krepon. "Pakistan's Nuclear Strategy and Deterrence Stability." In *Deterrence Stability and Escalation Control in South Asia*. Edited by Michael Krepon, and Julia Thompson. Washington D.C.: The Stimson Center, 2013, 6.

⁸² Kristensen and Norris, "Pakistan's nuclear forces, 2011," 2011.

⁸³ Mark Fitzpatrick. *Overcoming Pakistan's Nuclear Dangers*. London The International Institute for Strategic Studies, 2014, 25-26.

Development of the Nasr is widely believed to be part of a larger effort focused on the development and fielding of tactical nuclear weapons – defined as low-yield nuclear warheads deployable on short-range missiles designed to target advancing Indian military formations vice population centers.⁸⁴ According to official Pakistani statements, the missile is capable of carrying a small plutonium warhead and is designed in part to be fielded with conventional forces in combat. Nuclear-capable Nasr missiles could be concealed among conventional ones. It would be extremely difficult, perhaps impossible, for Indian forces to distinguish between the two – either when on the ground or when incoming.⁸⁵ In recent years, Pakistan appears to have focused its nuclear warhead weaponization efforts on developing smaller, lighter plutonium devices that could be placed on short-range delivery systems such as the Nasr.⁸⁶

Pakistan has two types of cruise missiles under development: the 600-kilometer-range, ground-launched Babur (Hatf-7) and the 350-kilometer-range, air-launched Ra'ad (Hatf-8). Both are described as low-altitude, terrain-hugging, stealthy, and accurate. Both can reportedly deliver nuclear and conventional warheads.⁸⁷ It is unclear which aircraft or what percentage of aircraft Pakistan has assigned for nuclear missions, but it has been suggested that its F-16 aircraft, along with some Mirage 5s, are the most likely to have a nuclear role. The F-16 has an extended range of 1,600 kilometers.⁸⁸

Nuclear strategy and doctrine

Available evidence indicates that Pakistan is concerned above all with countering India's growing superiority in conventional weaponry, deterring punitive or disarming conventional strikes by India, and preventing defeat if a major war were to occur. Pakistan has lost several wars with India and would likely lose a future conventional conflict. Nuclear weapons have taken on an increasingly important role

⁸⁴ Kristensen and Norris, "Pakistan's nuclear forces, 2011," 2011.

⁸⁵ Christopher Clary and Vipin Narang. "Doctrine, Capabilities, and (In)Stability in South Asia." In *Deterrence Stability and the Conventional Balance of Forces in South Asia*. Edited by Michael Krepon, and Julia Thompson. Washington D.C. : The Stimson Center 2013, 99-100.

⁸⁶ Kristensen and Norris, "Pakistan's nuclear forces, 2011," 2011.

⁸⁷ Ibid.

⁸⁸ Ibid.

in Pakistan's defense strategy, as its conventional capabilities have deteriorated relative to those of India.⁸⁹

According to a number of South Asia experts, Pakistan also looks on its nuclear weapons as a means of escalation control during limited wars or crises.⁹⁰ A key objective of Pakistan's nuclear program is to deter India from retaliating in the event of another major terrorist attack traced back to Pakistan.⁹¹ During the 1965 and 1971 wars, India quickly escalated to major conventional combat operations, defeating Pakistan militarily on both occasions. Since Islamabad's nuclear tests in 1998, Indian responses have been relatively restrained. Many in Pakistan's strategic establishment apparently believe that nuclear weapons have played an integral role in keeping India in check during repeated military confrontations on the subcontinent.⁹²

Pakistan has a stated policy of "minimum credible deterrence." In recent years, however, Islamabad's nuclear strategy and doctrine have, by most accounts, evolved in a more offensive direction. Recent semi-official statements have included terms such as "full-spectrum deterrence," "flexible deterrence options," and deterrence "at all levels of the threat spectrum."⁹³ According to Mark Fitzpatrick, Pakistan appears to be developing a menu of nuclear options at different levels of warfare, from the tactical to the strategic - to deter or counter various options that India may be considering at the conventional level and, perhaps, to eventually achieve escalation dominance in a crisis.⁹⁴

Pakistan's nuclear strategy and doctrine appear to be evolving towards development of limited nuclear options intended to deter conventional strikes by India, while minimizing the risk of massive retaliation. Pakistan maintains a nuclear first-use

⁸⁹ Rizwan Zeb. "David Versus Goliath? Pakistan's Nuclear Doctrine: Motivations, Principles and Future." *Defense and Security Analysis* 22 (2006): 389. Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 6.

⁹⁰ See for example: Christopher Clary. "The Future of Pakistan's Nuclear Weapons Program." In *Asia in the Second Nuclear Age* Edited by Ashley J. Tellis, Abraham M. Denmark, and Travis Tanner. Seattle, WA and Washington D.C. : The National Bureau of Asian Research 2013, 149. S. Paul Kapur. "India and Pakistan's Unstable Peace: Why Nuclear South Asia is Not Like Cold War Europe." *International Security* 30 (2005): 127-130. Ashley J. Tellis. *Limited Conflicts Under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis*. RAND Corporation MR-1450-USCA. 2001.

⁹¹ Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 16.

⁹² Clary, "The Future of Pakistan's Nuclear Weapons Program," 2013, 137-138. Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 6.

⁹³ "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 6.

⁹⁴ Fitzpatrick, *Overcoming Pakistan's Nuclear Dangers*, 2014, 32-33.

policy, which it insists is necessary in order to deter conventional attack by India.⁹⁵ According to Christopher Clary, the possibility of rapid defeat in a major conventional conflict with India could drive Pakistan to escalate quickly to the nuclear level in the event of a major war or even limited conventional strikes.⁹⁶ There appears to be an emerging consensus among Pakistani military planners that a more offensive-oriented doctrine is necessary for deterrence given India's growing conventional capabilities, particularly in the area of precision strike weapons.⁹⁷

As noted above, Pakistan is pursuing tactical nuclear weapons for potential use on the battlefield, possibly against advancing Indian ground forces or even operational-level command-and-control, communications, or logistical nodes in the rear. The military has reportedly made progress towards integrating nuclear and conventional war plans and has considered use of short-range, low-yield nuclear missiles in conjunction with conventional weaponry.⁹⁸ According to Michael Krepon, Pakistan appears to be shifting focus from strategic weapons that are unlikely to be used, to tactical nuclear weapons, which may have a lower threshold for use and are therefore more likely to be employed in a conflict. If this is true, tactical nuclear weapons could serve to strengthen the credibility of Pakistani threats of nuclear use in response to conventional attack.⁹⁹ The pursuit of battlefield nuclear weapons is, in part, a reflection of the fact that the Pakistani military, which tends to think about nuclear weapons in operational warfighting terms, controls nearly all aspects of the country's nuclear program.¹⁰⁰

In an actual contingency, the Pakistani military is likely to use the threat or actual launching of tactical nuclear strikes to demonstrate resolve to carry out more serious strikes on strategic targets, rather than to cause damage to Indian forces. Several analysts have pointed out that tactical nuclear weapons would be of limited utility against dispersed Indian tank or infantry formations.¹⁰¹ According to Krepon, Pakistan may be considering a variety of different targets in the event of nuclear use – possibly grouped into low-end, medium-end, and high-end/strategic options. The

⁹⁵ Ibid., 29-30.

⁹⁶ Christopher Clary. "Deterrence Stability and the Conventional Balance of Forces in South Asia." In *Pakistan's Nuclear Strategy and Deterrence Stability*. Edited by Michael Krepon, and Julia Thompson. Washington D.C. : Stimson Center 2013, 135.

⁹⁷Zeb, "David Versus Goliath? Pakistan's Nuclear Doctrine: Motivations, Principles and Future," 2006. Clary and Narang, "Doctrine, Capabilities, and (In)Stability in South Asia," 2013, 93.

⁹⁸ Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 5.

⁹⁹ Clary, "The Future of Pakistan's Nuclear Weapons Program," 2013, 130.

¹⁰⁰ Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013.

¹⁰¹ Shashank Joshi. "Pakistan's Tactical Nuclear Nightmare: De' ja` Vu?" *The Washington Quarterly* 36 (2013). Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 48.

low end might include demonstration strikes using tactical nuclear weapons, likely against Indian tactical units, intended to demonstrate intent to escalate to more damaging nuclear strikes. The medium end could include strikes on larger Indian military formations or command-and-control or logistical nodes, also intended to demonstrate intent to escalate. Strategic-level strikes could include targeting key infrastructure or population centers - with high- or low-yield nuclear weapons delivered via short- or medium-range missiles.¹⁰²

Pakistan has taken substantial measures to increase the survivability of its nuclear weapons and delivery systems in the face of what the military appears to believe is an increasingly serious threat of disarming counterforce strikes by India.¹⁰³ Military planners appear to be particularly concerned about India's efforts to acquire precision strike capabilities - including better aircraft, more precise missiles, and advanced surveillance technology.¹⁰⁴ The ranges from Indian airfields and missile sites to key Pakistani targets are relatively short, which makes Pakistani nuclear capabilities particularly vulnerable.¹⁰⁵ Pakistan has taken great pains to disperse its nuclear materials and delivery vehicles - including efforts to develop a larger number of smaller-yield warheads, conceal their locations, and develop road-mobile launchers - and to make command-and-control arrangements that enable the operation of a dispersed and mobile nuclear force in the event of hostilities.¹⁰⁶ A number of analysts have speculated that the military could delegate launch authority over nuclear weapons to subordinate commanders in a crisis or war, in order to hedge against strikes on key leadership and command-and-control centers.¹⁰⁷

Examples of military crises triggered by attacks attributed to Pakistan

In 1999 and 2001, attacks traced back to forces in Pakistan triggered military crises between India and Pakistan that threatened to escalate to nuclear use. In the first

¹⁰² "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 16.

¹⁰³ Zeb, "David Versus Goliath? Pakistan's Nuclear Doctrine: Motivations, Principles and Future," 2006.

¹⁰⁴ Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 17. Clary, "The Future of Pakistan's Nuclear Weapons Program," 2013, 17.

¹⁰⁵ Zeb, "David Versus Goliath? Pakistan's Nuclear Doctrine: Motivations, Principles and Future," 2006.

¹⁰⁶ Clary, "The Future of Pakistan's Nuclear Weapons Program," 2013, 140-145.

¹⁰⁷ Ibid., 138-140.

instance, Pakistani forces infiltrated into a sector of Indian-controlled Kashmir, resulting in an escalating confrontation with the Indian military. In 2001, an alliance of insurgent and terrorist groups based in Pakistan fought their way to the Indian Parliament building in New Delhi and nearly succeeded in killing key leaders in the Indian government. India mobilized along the Line of Control in Kashmir and threatened to strike militant training camps believed to be located on the Pakistani side.

Incursion into Indian-administered Kashmir in 1999

During the early winter months of 1999, Pakistani light infantry and special operations forces, accompanied by Islamist militants with ties to Pakistan's intelligence services, covertly infiltrated a remote sector of Indian-controlled Kashmir and occupied strategic positions on the high ground overlooking a key highway. When the snows began to melt in May, the Indian Army discovered the intrusion and moved to dislodge the infiltrators, believing them to be lightly armed militants. The Indian military soon discovered the extent of the infiltration and the probable role of regular Pakistani forces.

Islamabad attributed the intrusion to local militants and denied that its forces were in any way involved. Subsequent revelations confirmed that the infiltration was a deliberate plan by the Pakistani military to seize a portion of Indian-controlled Kashmir by way of a *fait accompli*. Pakistani military planners reportedly calculated that Indian forces would not cross into Pakistan or respond with sufficient force to dislodge the infiltrators for fear of escalation to nuclear conflict.¹⁰⁸

Indian ground forces first attempted to repel the intruders but were unable to do so given the difficulty of the terrain and the commanding heights occupied by Pakistani forces. When it became clear that ground operations would not be sufficient, Indian leaders ordered air strikes on Pakistani positions on the Indian side of the Line of Control. The employment of airpower so close to Pakistan was a potentially serious escalatory step, though Indian aircraft were reportedly directed not to cross into Pakistani airspace. Two Indian aircraft were reportedly shot down by surface-to-air missiles.¹⁰⁹

¹⁰⁸ Tellis, *Limited Conflicts Under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis*, 2001.

¹⁰⁹ For a chronology of events, see Sanjay Dutt. *War and Peace in Kargil Sector*. New Delhi: A.P.H. Publishing Corporation 2000. Neil Joeck. *The Indo-Pakistani Nuclear Confrontation: Lessons From the Past, Contingencies for the Future*. Nonproliferation Education Policy Center 2008, 2-3.

India sent additional aircraft and ground forces to the Kargil sector, eventually retaking several key positions in operations that involved heavy casualties. Indian forces reportedly could have retaken these positions with considerably less loss of life had they crossed the Line of Control and cut these locations off from resupply or launched airstrikes on positions on the Pakistani side. India chose not to take this step, apparently out of concern that doing so would escalate the conflict further. Pakistan's prime minister later ordered the military to withdraw from its remaining positions and the crisis was eventually diffused.

Soon after India's introduction of airpower, Pakistan's foreign secretary stated that his government would not "hesitate to use any weapon in our arsenal to defend our territorial integrity."¹¹⁰ Senior Pakistani policy-makers made similar statements along these lines over the course of the conflict. Indian, and possibly U.S., intelligence may also have observed moves by Pakistan to activate nuclear-capable missiles, though these reports have not been substantiated and are denied by the Pakistani government. Pakistan may also have taken nuclear warheads out of storage and put them on waiting F-16 aircraft.¹¹¹ According to Ashley Tellis, Indian officials later claimed that Pakistan issued numerous tacit nuclear threats in the form of official statements and readying of certain unspecified missile systems.¹¹²

Pakistan appeared to be sending the message that an invasion of its territory could be met with a nuclear response. According to Tellis, Pakistan's nuclear signaling was aimed, at least in part, at deterring India from further escalation, particularly in the form of strikes across the Line of Control in the Kargil sector or horizontal escalation along other sectors of the border.¹¹³ Tellis writes: "A careful review of the chronology of Pakistan's ambiguous threats to use its 'ultimate' weapons suggests that these warnings were issued only after India's conventional redeployments had reached significant proportions and were increasingly visible to Pakistani military intelligence."¹¹⁴

The Pakistani military has never officially acknowledged the involvement of its forces in the Kargil intrusion, much less explained its motivation behind the action. It is widely believed that the military leadership assumed that India would not risk escalation given Pakistan's possession of nuclear weapons, and would instead cede

¹¹⁰ *The Indo-Pakistani Nuclear Confrontation: Lessons From the Past, Contingencies for the Future*, 2008, 5.

¹¹¹ Fitzpatrick, *Overcoming Pakistan's Nuclear Dangers*, 2014, 55.

¹¹² Tellis, *Limited Conflicts Under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis*, 2001, 56.

¹¹³ Ibid., 15.

¹¹⁴ Ibid.

the captured ground to Pakistani forces and perhaps agree to negotiations over the disputed state of Kashmir.¹¹⁵ The military may also have sought to compromise India's control over other portions of Kashmir that rely on the highway running through the Kargil sector.

Pakistan ultimately gained little or nothing from the Kargil operation, while suffering considerable damage to its international reputation and to public confidence in the military, which had planned and executed the operation apparently without notifying civilian authorities. The operation and its aftermath sparked considerable debate within Pakistan's strategic establishment over the wisdom of engaging in low-level offensive actions such as the Kargil operation. The operation was heavily criticized as foolhardy and a strategic failure. Nonetheless, a number of analysts close to sections of the military establishment have argued that the operation could have been a success had the prime minister not capitulated to U.S. demands and ordered the army to withdraw. Others have argued that the operation could have succeeded had the military refrained from direct involvement and instead worked solely through proxy forces. It is not clear, therefore, what lessons the Pakistani military took from the 1999 crisis.

Attack on the Indian Parliament in 2001

On 13 December 2001, five militants armed with plastic explosives, suicide vests, assault rifles, and grenades infiltrated the secure perimeter surrounding India's Parliament building in New Delhi. As many as 250 parliamentarians were inside at the time, including India's vice president and foreign minister. The militants fought their way to the building itself, reaching it moments before guards secured the doors. One of the militants blew himself up outside a doorway used by cabinet ministers; security forces shot and killed the remaining four.¹¹⁶ The next day, Indian officials claimed to have evidence indicating that the Lashkar-e-Toiba and Jaish-e-Mohammad organizations – both of which had been involved in the Kashmir insurgency and were believed to have long-standing ties to the Pakistani military – were responsible for the attack.¹¹⁷

¹¹⁵ Ibid.

¹¹⁶ For details on the attack, see Steve Coll. "The Stand-Off: How Jihadi Groups Helped Provoke the Twenty-First Century's First Nuclear Crisis." *The New Yorker*. 13 February 2006, 2006. Kanti Bajpai. "To War or Not to War: The India-Pakistan Crisis of 2001-2" In *Nuclear Proliferation in South Asia: Crisis Behaviour and the Bomb*. Edited by Sumit Ganguly, and S. Paul Kapur. Routledge, 2008, 163-164.

¹¹⁷ Joeck, *The Indo-Pakistani Nuclear Confrontation: Lessons From the Past, Contingencies for the Future*, 2008, 12-13.

Indian leaders threatened to carry out strikes inside Pakistan, possibly against training camps believed to be located on the Pakistani side of the Line of Control, if Islamabad did not take immediate action against the two organizations. Pakistan denied any involvement in the attack and refused to take action against the groups believed to be responsible.¹¹⁸ India responded with a major mobilization along the Line of Control in Kashmir and elsewhere along the international border, the largest such mobilization since the 1971 India-Pakistan war. Pakistan mobilized forces on its side, including strike formations, aircraft, and missile forces.

In early January, Pakistan's president was quoted as saying that contingency plans reflected a "capacity of responding in a manner that would cause unacceptable damage to the enemy."¹¹⁹ Pakistan's foreign minister was quoted as saying, "Pakistan does not seek war, local or general, conventional or nuclear."¹²⁰ Soon after making these remarks, India's foreign minister, when asked whether Pakistan might respond with nuclear weapons if India took military action, responded: "We (India) could take a strike, survive, and hit back. Pakistan would be finished."¹²¹

On 12 January 2002, Pakistan's president made a seminal speech in which he categorically stated that Pakistani territory would no longer be used for terrorist attacks on India, including Kashmir. He announced a blanket ban on the Lashkar-e-Toiba and Jaish-e-Mohammad and several related groups, and announced plans to take action against extremist networks inside the country. India kept its forces mobilized but indicated that it no longer had immediate plans to launch strikes on Pakistani territory. The stand-off continued at a lower level of escalation until 14 May 2002 when militants attacked a bus carrying the families of Indian soldiers serving in Kashmir, killing an estimated 34 people. Tensions again escalated and firing resumed along the Line of Control, but tensions were eventually reduced. In October 2002, the two militaries began the process of demobilizing their forces along the border.

Attribution played a complicating role during the crisis. There appears to be no credible evidence that the Pakistani government was in any way directly involved in the Parliament attack. Indian officials claimed to have strong evidence that the militants were from the Lashkar-e-Toiba and the Jaish-e-Mohammad - two organizations with known ties to the Pakistani military. Indian officials did not, however, claim to have credible evidence of official Pakistani involvement. Some analysts have posited that the attack was carried out without the knowledge, and

¹¹⁸ Bajpai, "To War or Not to War: The India-Pakistan Crisis of 2001-2" 2008, 163.

¹¹⁹ Quoted in Fitzpatrick, *Overcoming Pakistan's Nuclear Dangers*, 2014, 61.

¹²⁰ Bajpai, "To War or Not to War: The India-Pakistan Crisis of 2001-2" 2008, 165.

¹²¹ Quoted in *ibid.*

possibly against the wishes, of Pakistani intelligence – possibly to instigate a crisis between the two countries.¹²²

During the years leading up to the Parliament attack, the Pakistani military had reduced many of its more direct and overt connections to groups such as the Lashkar-e-Toiba and the Jaish-e-Mohammad, which may have reduced some of the government's influence over these organizations as well as its insight into their activities. Over the last decade, these and similar groups based in Pakistan have become increasingly independent of the Pakistani government, due to pressure on Islamabad to cut ties with violent extremist organizations. Indian leaders nonetheless believed that a forceful response was required and insisted on holding Pakistan responsible, given its continued enabling support (both active and passive) to the organizations involved in the attack.

Pakistan gained little or nothing from the Parliament attack and lost a great deal, in terms of the cost of counter-mobilization and the concessions its leaders were forced to make, further strengthening the argument that Islamabad was probably not directly involved. The strike was related indirectly to Pakistan's long-standing campaign to pressure India over Kashmir through support to militant groups, including the Lashkar-e-Toiba and the Jaish-e-Mohammad. The Parliament attack is probably best seen as an unauthorized and ill-advised attack that did considerable damage to Pakistan's overall efforts in regard to Kashmir.

India's response to these attacks

The 1999 and 2001 attacks and subsequent crises prompted changes to India's largely defensive military posture. These changes were aimed at enabling limited retaliatory strikes in the event of another provocation. Indian policy-makers and strategists began discussing these changes soon after the 1999 Kargil war and started pursuing them in earnest following the 2001-02 crisis. In April 2004, India announced the development of a new, more offensive-oriented doctrine known as Cold Start, which called for rapid, limited strikes into Pakistani territory under short notice. The ultimate goal of Cold Start was to deter Pakistan from engaging in future provocations – to persuade Islamabad that conducting low-level attacks and limited military operations, including active or passive support to insurgent and terrorist groups, would have consequences.

The Cold Start doctrine evolved out of a belief among the Indian leadership that it required more flexibility and a greater array of military options, especially at the

¹²² Coll, "The Stand-Off: How Jihadi Groups Helped Provoke the Twenty-First Century's First Nuclear Crisis," 2006.

lower ends of the warfare spectrum.¹²³ Particularly after the 2001 crisis, India's leaders realized they had few usable options in response to limited attacks attributed to Pakistan. India's relatively passive defense posture in 2001 - focused on either stopping a Pakistani advance or fighting a large-scale, theater-wide conflict - made it considerably difficult to respond quickly and effectively without risking a major war. Following the attack on the Indian Parliament in December 2001, it took nearly three weeks for the Indian Army to position its forces for offensive operations. In the meantime, Pakistan had time to position its forces, and the window of time in which an Indian military response might have appeared legitimate had already closed.¹²⁴

Early iterations of Cold Start involved changes to the organization and the command and control of the Indian Army, focused on enabling shallow ground offensives into Pakistan. Over time, focus has shifted towards the procurement of more advanced capabilities - including aircraft, missiles, guided munitions, and intelligence, surveillance, and reconnaissance technologies - many of which fall into the category of precision strike weapons most likely to be employed by air and naval forces, vice ground units. According to Christopher Clary, precision-strike capabilities could make it much easier for India to retaliate quickly in the event of another attack, with less risk of casualties than would be the case with ground forces. Air, naval, and missile forces require less mobilization time. In many cases, they can be launched immediately in the event of an attack, against pre-planned targets, and they do not require putting troops into harm's way. As India's precision strike capabilities improve, they could emerge as the preferred option.¹²⁵

According to Mark Fitzpatrick, Pakistan appears to be developing a menu of nuclear options at different levels of warfare, from the tactical to the strategic - to deter or counter various options that India may be considering at the conventional level and, perhaps, to eventually achieve escalation dominance in a crisis.¹²⁶ Various statements by Pakistani officials suggest that the main impetus behind the Pakistani military's interest in nuclear warfighting is to counter India's Cold Start doctrine. Their reasoning is that, given Pakistan's clear inferiority in conventional weaponry, the only

¹²³ Neil Joeck. "Prospects for Limited War and Nuclear Use in South Asia." In *Deterrence Stability and Escalation Control in South Asia*. Edited by Michael Krepon, and Julia Thompson. Washington D.C.: The Stimson Center 2013, 107-108.

¹²⁴ Walter C. Latwig. "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine." *International Security* 32 (2007/08): 162.

¹²⁵ Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia," 2013, 148-151. See also Clary and Narang, "Doctrine, Capabilities, and (In)Stability in South Asia," 2013, 98.

¹²⁶ Fitzpatrick, *Overcoming Pakistan's Nuclear Dangers*, 2014, 32-33. See also Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," 2013, 19.

way to deter limited Indian conventional strikes is to credibly threaten limited nuclear use.¹²⁷

Conclusion

Provocative attacks such as those of 1999 and 2001 are probably less likely today given the largely negative results of these crises for Pakistan's and India's efforts to develop retaliatory options. They cannot be entirely ruled out, however, given the apparently differing interpretations of the two crises within Pakistan's strategic establishment. It is not clear whether Islamabad has cut all ties with the Lashkar-e-Toiba and related organizations, which retain a large infrastructure in Pakistan capable of orchestrating sophisticated attacks with or without official involvement. Furthermore, Pakistan's revisionist aims in regard to Kashmir remain unchanged, as do hostilities between the Indian and Pakistani militaries.

Any future attack attributed to Pakistan that is sufficiently serious to provoke an Indian military response is more likely to resemble the 2001 Parliament attack than the Kargil operation in 1999. When it comes to employing force to coerce India over Kashmir, Pakistan's most likely course of action is to provide varying levels of support for insurgents fighting in Kashmir – possibly with the understanding that these groups might, on their own initiative, carry out attacks in major Indian cities. Given the international costs imposed on Pakistan as a result of the Kargil operation and India's aggressive response, it is highly unlikely that regular Pakistani forces would again infiltrate into Indian territory and seek to hold ground.

It is unlikely that any future attack of strategic significance would be directly attributable to the Pakistani government with any degree of certainty. Attacks of similar magnitude outside Kashmir are likely to be carried out without the direct involvement or even knowledge of the Pakistani military and its intelligence agencies. Plausible deniability became even more important for Pakistan as a result of the Kargil operation; thus, Islamabad is not likely to get involved in an attack that could be easily traced back to the government. The groups responsible for the assault on the Parliament have become increasingly independent of the Pakistani state during the last decade. Pakistan has taken limited action against some of these groups,

¹²⁷ Timothy D. Hoyt. "Pakistan's Nuclear Posture: Thinking about the Unthinkable?" In *Strategy in the Second Nuclear Age*. Edited by Toshi Yoshihara, and James R. Holmes. Washington D.C.: Georgetown University Press, 2012, 187.

particularly those implicated in attacks inside Pakistan, but has largely refrained from taking action against those focused on attacks in India.¹²⁸

Due to the fact that these groups continue to enjoy some level of safe haven in Pakistan, perhaps with some active or passive support from elements of the Pakistani state, Indian leaders may come under pressure to respond militarily – even without credible evidence of direct official involvement (there was no such publicly available evidence in the case of the Parliament attack). The potential for future provocations by non-state groups acting independently of the Pakistani state presents serious risks of inadvertent escalation. Indian leaders might feel compelled to respond whether or not the Pakistani government is responsible, forcing Pakistan to issue threats in return in an attempt to deter further escalation by India. New Delhi's pursuit of limited military options threatens to further compound these dangers.

It does not appear that Pakistan's possession of nuclear weapons has given Islamabad significant leverage to win concessions from India in terms of Kashmir or other contentious issues. Islamabad's efforts at coercive escalation in the shadow of nuclear weapons appear to have largely failed. India offered no concessions and ultimately forced Pakistan to withdraw from its forward positions on the Indian side of the Line of Control. India's aggressive response in 1999 and its subsequent pursuit of limited retaliatory strike options suggests that India will be even less inclined in the future to give in to pressure from Pakistan in the form of support to proxy forces, limited attacks along the Line of Control in Kashmir, or other offensive actions at the lower ends of the warfare spectrum.

It is likely that Pakistan will continue to count on its nuclear weapons to deter India from attacking. There appears to be wide consensus in Islamabad that nuclear weapons deterred India from expanding the war in 1999 beyond limited use of airpower in the Kargil sector (Indian air and ground forces were careful not to cross the Line of Control into Pakistan). As India develops more limited conventional options, Pakistan is likely to push ahead with limited nuclear options. Islamabad's pursuit of tactical nuclear weapons designed for use on the battlefield lends credence to this conclusion. There remains the risk that, if Islamabad were to develop what it believes to be a robust nuclear deterrent against limited conventional strikes by India, Pakistan could step up its efforts to coerce India over Kashmir through increased support to proxy forces. The idea that limited war can be fought despite the presence of nuclear weapons, has not been entirely rejected – either in Pakistan or in India.

¹²⁸ Jerry Meyerle. *Unconventional Warfare and Counterinsurgency in Pakistan: A Brief History*. CNA Corporation 2012.

Tactical nuclear weapons are more likely to be used in a conflict than strategic weapons, because the threshold for their use appears to be lower. As a result, threats to use tactical nuclear weapons may be more credible – particularly against the threat of limited conventional strikes – than is the case with strategic weapons alone. Pakistan's evolving nuclear posture suggests that Islamabad would quickly escalate to nuclear threats in the event of any conventional attack on its territory, even if such an attack were relatively limited. These factors, combined with Pakistan's first use policy, may increase the likelihood that Islamabad would use nuclear weapons against India in a contingency. Pakistan might intend this threat to deter India altogether – to lower the ceiling of potential Indian escalation, dampen India's desire to retaliate militarily to Pakistani-linked terrorism, or minimize the scale on which India might seek to combat Pakistan in a possible future conflict.

Conclusions and Implications

In the preceding sections, we reviewed writings on nuclear deterrence in the “second nuclear age,” as well as recent research exploring the relationship between nuclear weapons and coercion. We then analyzed the North Korean and Pakistani nuclear weapons programs, including their capabilities, strategy, and doctrine. Finally, we looked at recent examples of coercive escalation by both countries and the responses that these actions evoked on the part of their regional rivals. This analysis leads us to a number of conclusions, which have implications for U.S. nuclear policy and military strategy.

Conclusions

Evidence from the cases of North Korea and Pakistan casts doubt on our first hypothesis – that nuclear states such as North Korea and Pakistan will engage in coercive escalation in the future. Available information suggests that escalatory provocations, such as those traced back to North Korea in 2010 and to Pakistan in 1999 and 2001, are not likely in the near term. Our research does not, however, disconfirm this hypothesis. The potential for renewed attacks – perhaps of similar or greater magnitude – cannot be ruled out, particularly in the longer term.

Neither Islamabad nor Pyongyang gained much from the crises that resulted from these provocations. It could be argued that South Korea made some very limited short-term concessions following the shelling of South Korean-controlled islands in November 2010, but North Korea made no identifiable long-term gains. Islamabad gained nothing from its incursions into Kashmir in 1999, and it lost a great deal in regard to its international reputation and the prestige of its armed forces. Despite considerable efforts by North Korea and Pakistan to signal superior resolve through threats to use nuclear weapons, neither was particularly successful at capitalizing on these efforts and achieving actual concessions.

The attacks of 2010 spurred South Korea to set aside its defensive posture and long history of restraint, and adopt a more offensive strategy. India has reacted in a similar fashion to the crises of 1999 and 2001. South Korea and India appear more resolved than ever to resist attempts at coercion spurred by provocative acts of violence that create the risk of nuclear conflict. The next effort by Pyongyang or

Islamabad to provoke a crisis could result in costly retaliation – likely in the form of precision strikes.

Our research suggests that possession of nuclear weapons does not lend countries greater leverage in crises with other nuclear powers. It may be that Pakistan and North Korea, as new nuclear powers, attempted to probe the limits of what they believed could be gained from possession of nuclear weapons – and were probably disappointed. If this is true, it is possible that the temptation to engage in coercive escalation will become tempered over time as relatively new nuclear powers come to understand the limits of what can actually be achieved by possessing nuclear weapons.

Evidence from crises on the Korean Peninsula and the Indian subcontinent suggest that attempts at low-level coercion can be deterred, at least to some extent. Aggressive military responses by South Korea and India appear to have had some effect on the strategic calculus in Pyongyang and Islamabad. There have been no North Korean provocations on the scale of the 2010 attacks since South Korea's forceful response to the shelling of its marines in November of that year. Pakistan has not attempted military action in Kashmir since being repulsed by Indian forces in 1999, and has taken some action against the militant groups responsible for the 2001 attack on India's Parliament following threats of military action by New Delhi.

That said, the possibility of renewed attacks resulting in potentially escalatory military crises cannot be ruled out in the more distant future, particularly as the North Korean and Pakistani nuclear weapons programs develop and cross key thresholds. For North Korea, these thresholds might include: (1) the development of a survivable second-strike capability, likely in the form of nuclear warheads deliverable via missiles; and (2) the development of a long-range nuclear missile capable of reaching the United States. For Pakistan, these thresholds might include (1) development of a more robust and survivable second-strike capability, in the form of nuclear-capable submarines and other delivery options beyond India's effective targeting capability; and (2) further development of limited nuclear options capable of deterring India from responding militarily, even in a limited fashion, to low-level attacks traced back to Pakistan.

Major attacks attributed to North Korea and Pakistan came soon after key nuclear tests that demonstrated possession of an early-stage usable nuclear weapon. Since then, nuclear weapons have taken on an increasing role in the defense policies of Pakistan and North Korea as their conventional capabilities have deteriorated in relative terms. Both countries have invested considerable resources in pursuit of more robust and survivable nuclear forces. Pakistan is pursuing tactical nuclear weapons that promise to restrict Indian options across the spectrum of potential military action. North Korea is pursuing long-range nuclear-capable missiles that can reach the United States.

Though North Korea and Pakistan appear to have gained little from attempts at coercive escalation, it is not clear what either regime has learned from these failed attempts. Too little is known about Pyongyang's strategic calculus to be able to say with confidence that the regime looks on the 2010 attacks as having been a mistake not to be repeated. It is possible that the North Korean leadership believes the attacks were a success, particularly in affecting dynamics within the regime, but also perhaps in coercing South Korea to cease firing artillery rounds into disputed waters near the Northern Limit Line. The same is true of Pakistan. While many of the country's leaders have become convinced that the 1999 operation was a serious error, others disagree.

North Korea and Pakistan continue to demonstrate the intent and capability to conduct provocations. The revisionist aims of these regimes remain, as do tendencies to pursue these aims through force. Decision-makers in Pyongyang and Islamabad continue to demonstrate a high tolerance for risk and a penchant for brinkmanship. Both regimes retain capabilities to conduct low-level attacks – such as special operations forces in the case of North Korea, and connections to terrorist and insurgent groups in the case of Pakistan.

The evidence is mixed in regard to our second hypothesis: that smaller nuclear-armed states will pursue limited nuclear options. There is considerable evidence from the Pakistan case but little from North Korea. Evidence from Pakistan suggests that the regime is pursuing limited nuclear options against the possibility that a future crisis could escalate to major combat operations. As India has pursued the ability to launch limited conventional strikes in response to acts of terrorism and other provocations attributed to Pakistan, Islamabad has focused its resources on development of tactical nuclear weapons for use on the battlefield.

Pakistani military leaders appear to believe that their lack of a credible conventional deterrent, combined with India's growing military capabilities, makes limited nuclear options a necessity. As New Delhi has sought to lower the threshold for conventional action, Islamabad has responded by attempting to lower the threshold for nuclear action, in the hopes that doing so will deter India from taking military action if another attack were traced back to Pakistan. These developments suggest that a future crisis between India and Pakistan could quickly escalate to overt nuclear threats, or even limited nuclear strikes, if India were to take military action.

There are few data to support the hypothesis that North Korea is pursuing limited nuclear options, though there is the potential for North Korea to do so in the future. Some analysts have argued that North Korea might pursue the ability to use nuclear weapons in a non-strategic capacity, such as detonating a low-yield device on its own territory against an invading force. There is little evidence, however, to support these speculations. North Korea's conventional deterrent – in the form of long-range artillery capable of causing far-reaching damage to Seoul – may be enough to deter

significant military action by South Korea and the United States, at least for the time being.

Tactical nuclear warfighting requires the possession of small nuclear warheads that can be delivered via short-range missiles or other means, as well as a developed nuclear warfighting doctrine and command-and-control arrangements that appear to be unfeasible for North Korea at the present time. It remains to be seen whether North Korea will go down this path (as Pakistan has), follow China's example and focus on a relatively minimal strategic deterrent, or go down a different road.

The combination of more offensive doctrines and more precise long-range strike weapons on the part of India and South Korea could increase the sense in Islamabad and Pyongyang that their nuclear arsenals (which remain relatively vulnerable to counterforce strikes - North Korea's in particular) could be at risk of a disarming preemptive attack, driving them to take greater measures to ensure the survivability of their strategic forces. These trends could also increase the risk of escalation to nuclear use in the event of conventional strikes that pose a threat to the viability of nuclear weapons and delivery systems.

Implications

These conclusions offer some important insights into policy issues relating to deterrence, both nuclear and conventional - particularly the challenge of countering and deterring acts of coercion by nuclear powers at lower levels of escalation. The above research also has implications for military options in response to acts of coercion.

Policy

The 2010 Nuclear Posture Review directs the Department of Defense to reduce the role of nuclear weapons in U.S. defense strategy and to increase the range and potential role of conventional strike options, including replacement of nuclear options with conventional alternatives where feasible.¹²⁹ These changes are possible for the United States and other advanced militaries due to major evolutions in precision weaponry, as well as reductions in the Russian nuclear arsenal.¹³⁰ At the same time that nuclear weapons have declined in significance for the United States,

¹²⁹ *Nuclear Posture Review Report* U.S. Department of Defense 2010.

¹³⁰ Barry D. Watts. *The Evolution of Precision Strike*. Center for Strategic and Budgetary Assessments 2013.

they have taken on a growing role in the defense policies of new nuclear powers such as North Korea and Pakistan, whose conventional capabilities are deteriorating in relative terms. These countries have sought to leverage their emerging nuclear capabilities to compel as well as to deter, often after crossing key capability thresholds.

While violent provocations resulting in potentially escalatory military crises by North Korea or Pakistan may not be very likely in the short term, our research suggests that they could occur further down the road – in which case, policy-makers would need options that promise to counter acts of low-level coercion and deter future attempts.

Demonstrating strength and resolve while limiting escalation

Achieving U.S. foreign policy goals while reducing the risk of escalation to nuclear use may prove a difficult challenge in the coming years. If the United States does not credibly communicate that there is nothing to be gained from nuclear brinkmanship, there could be a cascade of coercive threats further down the line as adversaries become emboldened to test U.S. resolve. The United States and its allies may need to respond forcefully to acts of aggression and project power into key areas of U.S. interest while minimizing the risk of escalation in crises that could rise to the nuclear level.

The need to respond forcefully suggests a requirement for limited military options designed to send a message, while the need to control escalation suggests a requirement for diplomatic and other non-military mechanisms. The two would need to be carefully integrated into regional policies and war plans in order to be effective when decisions are being made in the fog of crisis. Given the risk of escalation to nuclear use, every military action, however limited, would need to fall within a clearly bounded policy construct where the exact nature, limit, intent, and potential escalatory effects of the action are clearly thought out ahead of time.

Deterring coercion aimed at allies and partners

These challenges are important for extended deterrence as well. Deterring low-level acts of coercion aimed at regional powers will be important to the credibility of U.S. military commitments that underpin U.S. influence in Asia. Efforts to challenge U.S. power in the western Pacific may come not in the form of major confrontations, but rather as periodic low-level offensives against U.S. and allied forces, resulting in localized military crises that periodically test U.S. resolve and red lines and gradually chip away at U.S. authority.

South Korea is the main target of coercive actions by North Korea – particularly over disputed waters near the Northern Limit Line. Though U.S. forces were not involved in the 2010 crises sparked by North Korean attacks, U.S. and South Korean forces have agreed to bilateral measures aimed at deterring further provocations. In March

2013, they signed a Combined Counter-Provocation Plan. These measures rest largely on conventional – not nuclear – deterrence, particularly military responses at the lower ends of the warfare spectrum.

Against coercion aimed at regional powers, forward-deployed conventional forces capable of calibrated responses to low-level attacks and other acts of coercion are likely to play a more important role than the U.S. nuclear umbrella. Threats of nuclear retaliation are not likely to be credible against small-scale attacks and controlled escalation in regional crises. Provocations must be met in kind with proportionate responses that demonstrate strength and resolve as well as restraint. The implication is that extended deterrence in Asia will require a mix of conventional forces capable of delivering a variety of different responses in conjunction with allied forces.

Reducing escalation between regional powers in crises

The United States may also be called upon to mediate in crises between regional nuclear powers sparked by provocative acts of violence, as was the case with India and Pakistan in 1999 and 2001. As South Korea takes on more responsibility for its own security and develops a more offensive military posture, it may also be necessary to mediate crises between North and South Korea, in order to prevent inadvertent escalation – perhaps, even, to encourage restraint on the part of South Korea. Policy-makers may require tools aimed at reducing escalation between third parties involved in regional conflicts under the threat of nuclear escalation.

Covert provocations, in which attribution is uncertain, will prove a considerable challenge and may require U.S. involvement to control escalation. The sinking of a South Korean warship in March 2010 and the attack on India's Parliament in 2001 were both covert attacks. Decision-makers in Seoul and New Delhi struggled with how to respond to these provocations. The attack on India's Parliament was perhaps the most challenging of the two – given the lack of evidence linking the Pakistani government directly to the attack, combined with intense pressure on Indian leaders to respond forcefully. If one relaxes the assumption that states are unitary rational actors and introduces the possibility of major provocations by rogue intelligence outfits or terrorist organizations, the risk of inadvertent escalation becomes particularly acute. The 2001 attack on India's Parliament may have occurred without the knowledge of the Pakistani authorities and against their better judgment. Even though India's leaders were aware of this possibility, they nonetheless decided to hold Pakistan responsible and threatened to take military action. These events demonstrated that a non-state group operating independently could provoke a military crisis between nuclear powers, perhaps with the intention of causing a war. The sinking of *Cheonan* by a North Korean submarine exemplifies a different but related set of challenges, in that it appears to have been driven by internal considerations and was a covert action where attribution was clear but difficult to

prove decisively. Another attack like the sinking of *Cheonan* could lead to an aggressive response by South Korea.

Small-scale attacks and provocations by North Korea and Pakistan are driving South Korea and India – countries with traditionally defensive military postures and passive foreign security policies – towards more offensive military doctrines, in an attempt to deter future attempts at coercive escalation and to develop scalable options for response to these provocations if and when they occur. Military planners in South Korea and India appear to have incorporated concepts of escalation control into their plans for retaliatory action. However, whether these measures are based on the right assumptions and promise to be effective in a future crisis is not entirely clear. These trends do not bode well for stability in either region.

It may be necessary to prevail upon India and South Korea to utilize restraint and refrain from highly escalatory actions – particularly in crises sparked by covert provocations where attribution is not clear. This may prove difficult as South Korea and India adopt more offense-oriented doctrines in response to repeated provocations. Leaders may come under intense pressure to respond despite uncertainty about the origins of an attack. U.S. diplomatic intervention on both sides following the assault on India's Parliament played a key role in reducing the risk of inadvertent escalation.

Deterring threats of limited nuclear use

Despite the best efforts of policy-makers in Washington, it is possible that a crisis sparked by a provocation could escalate out of control, leading to limited use of nuclear weapons by an adversary facing the prospect of military defeat at the hands of U.S. forces. It may be necessary to consider options – actual and publicly stated – in the event of a non-strategic nuclear strike on the United States or a regional ally. One of the primary goals of the Nuclear Posture Review is to reduce the role of nuclear weapons in deterrence of conventional attack, to the point where nuclear weapons may be used only in response to a nuclear strike on the United States or its allies. Contingencies involving non-strategic nuclear attack are not discussed in the review.

It remains unclear how the United States would respond – particularly to the use of small-yield nuclear weapons against forward-deployed military forces or peripheral non-military targets. Tactical nuclear weapons fall into a grey area where U.S. threats of strategic nuclear response may not be credible, especially if they are over issues that are not of existential concern in Washington. An adversary might calculate that the United States would not use nuclear weapons in response to a relatively small nuclear strike, given the risk of triggering a nuclear war. Such a contingency is worthy of deeper thought, given Russia's continued investment in non-strategic nuclear weapons.

Against limited nuclear strikes, the threat of conventional attack may have more credibility, given the lower threshold for use of even the most destructive conventional weaponry. Evidence from North Korea and Pakistan suggests that both regimes take the threat of conventional attack very seriously and worry less about the risk of nuclear war. If non-nuclear munitions can cause the right amount and types of damage to deliver an adequate response, threats of nuclear retaliation may not be necessary.¹³¹ Even if tactical nuclear weapons are used against U.S. or allied forces, it will still be necessary to control escalation and keep the conflict calibrated.

Military options

The above discussion has several implications for the Department of Defense in regard to military options. First, military commanders may need a diverse array of usable conventional options, particularly at the lower ends of the warfare spectrum. Second, escalation control would need to be a central planning factor in the design and employment of these options. Third, U.S. forces may need credible options in the face of a potential limited nuclear strike, in the event that a military crisis were to spiral out of control.

Limited military options

Military commanders may need a diverse array of usable conventional options, particularly at the lower ends of the warfare spectrum. When it comes to deterring low-level coercion, conventional capabilities will be essential, as nuclear threats are not likely to be credible. This has significant implications for the Air-Sea Battle concept, which seeks to provide military commanders with an array of conventional options aimed at enabling major combat operations in contested environments and defeating adversary anti-access and area denial (A2/AD) capabilities.¹³²

The challenges identified in this study suggest that commanders may also need a variety of military options below the threshold of active hostilities – to send specific messages, while minimizing the risk of follow-on escalation. To be effective and minimize the risk of escalation, military responses to low-level acts of coercion would need to be proportionate, timely, precise, and calculated to send a clearly defined message of both resolve and restraint. Precision strikes may be needed to

¹³¹ Charles Glaser and Steve Fetter make a similar argument about counter-force strikes against nuclear facilities, given recent advancements in precision weaponry. They note that conventional weapons are capable of destroying all but the most hardened nuclear sites and are less likely to spark a nuclear counter-attack. Glaser and Fetter, “Counterforce Revisited: Assessing the Nuclear Posture Review’s New Missions,” 2005.

¹³² *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*. U.S. Department of Defense, Air-Sea Battle Office 2013.

cause just enough damage to achieve the desired effect and appear proportionate to the original provocation. This might require offensive actions that are similar in scale and character - for example, South Korea's launching of counter-battery fire in response to shelling by North Korea, and India's launching of ground attacks to dislodge infantry forces occupying parts of its territory. Similarly, covert attacks may require covert responses.

Strikes on more peripheral or tactical-level targets are likely to be less escalatory. The same may be true of strikes that shut down capabilities and systems that are important to an adversary's military but are not essential to its operation and are not related to the security or employment of strategic weapons. Military responses that occur in domains separate from the original attack could provoke counter-responses that lead to unwanted escalation. The goal of such strikes would not be to disrupt or shut down an adversary's defenses, but instead to send a message that low-level acts of coercion will be met with a proportionate military response - i.e., that there will be consequences to even low-level provocations.

Timing would be a critical factor. Retaliation would have to occur immediately after the provocation. The longer a response is delayed, the less effective it is likely to be and the more likely it is to be perceived as an act of premeditated aggression (particularly by the international community) rather than a legitimate, measured response. One lesson that India internalized from its 2001-02 crisis with Pakistan was that there is a brief window of time for aggressive action, past which strikes or extended mobilizations lose their effect and become counterproductive. Both India and South Korea are pursuing postures - including rules of engagement, command-and-control arrangements, and new capabilities - that enable immediate military responses.

Attribution will be important but also a considerable challenge. It may at times be necessary to assign responsibility for the provocation in order for the response to be viewed as legitimate by the international community. In the absence of unimpeachable evidence, the only solution may be to publicly accuse the regime of a covert provocation and proceed with military action, as India did in response to the attack on its Parliament in October 2001. Doing so could carry risks, however. An attack without adequate attribution could be considerably more escalatory. The target regime could face strong incentives to counter-attack, rather than tacitly admit responsibility for attacks it has repeatedly denied.

Commanders may want to consider the difference between publicly acknowledged strikes and those that are conducted in such a way that they do not become publicly known - and do not, therefore, put public pressure on the leaders of the target regime. Covert responses to covert provocations could be more effective in some circumstances, given that they are likely to remain outside the public eye.

The use of unmanned aerial vehicles (UAVs) might enable less escalatory responses. Unmanned aircraft do not pose the risk of U.S. pilots being captured or killed, which could serve to escalate a conflict. Also, UAVs are capable of precise, low-yield strikes. Given that their use so far has been for highly tactical, sub-conventional missions, their employment sends the message that the strike is not intended for targets of strategic or even operational importance.

Cruise missiles offer more capable but possibly more escalatory options. Cruise missiles are capable of operating in non-permissive airspace, including that of countries with sophisticated air defense systems. Unlike strikes by manned aircraft or the enforcement of no-fly zones, cruise missile strikes do not require suppression of air defenses. They also can be very precise, given accurate intelligence. Because the United States has retired from service its only nuclear-capable, sea-launched cruise missile (the Tomahawk Land Attack Missile – Nuclear), an incoming cruise missile is less likely than a ballistic missile or tactical aircraft to be confused for a nuclear attack.

Covert, deniable strikes by special operations forces could be a useful tool against regimes that engage in covert provocations. North Korea has invested heavily in special operations forces and Pakistan in proxy forces in the form of Islamist militant groups operating in Kashmir and other parts of India. Under some circumstances, plausible deniability could serve to reduce the risk of escalation. Covert strikes, particularly those that do not become publicly known, place less pressure on adversary leaders who might otherwise feel compelled to respond.

Cyber and electronic warfare platforms offer non-kinetic strike options that are potentially less escalatory given the absence of actual physical damage. Under some circumstances, actions that temporarily shut down computer networks or communications systems could have a deterrent effect, particularly if they demonstrate capability and intent to cause more far-reaching disruptions in the event of a larger conflict.

Effective responses to low-level actions against a nuclear adversary are not likely to require conventional ground forces. India's attempts to develop a counter provocation strategy based on its army-centric Cold Start doctrine do not appear to have been successful. On the other hand, New Delhi's efforts to modernize its air force, develop some stand-off precision-strike capability, and improve its options at sea appear more promising. Forward-deployed and ready air and naval capabilities can be used immediately (they require relatively little mobilization time) to launch quick punishing strikes without risking a prolonged conflict on the ground. U.S. and South Korean forces could become tied down in a prolonged conflict if ground forces were sent into North Korea. Pyongyang's preparations for total mobilization and "people's war" threaten to drag foreign forces immediately into a messy insurgency and heavy fighting among civilian populations.

Escalation control

Attempts to deter small-scale attacks through limited military operations would involve considerable risk of escalation. Low-level military responses would need to be carefully bounded and closely integrated with other non-military escalation control measures, in order to limit the risks of follow-on escalation. Managing escalation would need to be a central planning factor in the design and employment of these options. U.S. forces may need to develop concepts of operation aimed primarily at controlling escalation and keeping the fighting limited.

Decision-makers would need to consider the escalatory potential of every type of strike and consider how the operation is likely to be perceived by the target regime. Responses would be intended to send a message – to punish in order to counter and/or deter future provocations, not so much to shut down adversary capabilities in order to enable access and freedom of maneuver for U.S. forces, which is the primary intent behind the Air-Sea Battle concept. Controlling escalation would be more important – and a greater challenge – than the destruction of adversary systems and capabilities.

Military commanders may need to allow an adversary an off-ramp in a crisis, in order to avoid trapping its leaders in an escalatory spiral – i.e., release valves that provide the adversary with face-saving options which promise to reduce tensions once a proportionate response has been delivered. A major driver of tit-for-tat escalation, especially regarding insecure and unstable regimes like North Korea, is pressure on leaders from within the regime to not look weak. Backing down during a public confrontation with Seoul or Washington could prove fatal to a North Korean leader struggling to stay in power. In these situations, face-saving measures may be important, but must be weighed against the risks of backing down and appearing to have lost the confrontation. Much would depend on the accuracy of information about decision-making within the regime.

In the event of a strike that could be perceived as a strategic threat, it may be advisable to signal that the attack is limited. This could be done through various means such as public statements, careful choice of targets, and use of specific weapons that are limited to non-strategic use, as well as by sending missiles or aircraft along flight paths that steer clear of potential strategic targets. Prior to a crisis or during its early stages, threats to launch decapitating strikes could serve as a powerful deterrent. On the other hand, once a crisis reaches the higher levels of escalation – particularly if regime change is on the table – it will be important to credibly promise that leaders will not be harmed, in order to reduce the sense of an impending existential threat that might trigger a desperate or suicidal nuclear response.

There may be room in the Air-Sea Battle concept for additional thinking on how to manage and control escalation following low-level strikes on adversary weapons

systems. The concept as it stands is focused largely on warfighting, particularly the capabilities and service-level integration needed to fight in contested environments. There is scope for exploring the escalatory potential of various Air-Sea Battle type operations and thinking more about how escalation control measures can be better integrated into existing war plans and concepts of operation.

Responses to limited nuclear use

U.S. forces may need credible options in the face of a potential limited nuclear strike, in the event that a military crisis were to spiral out of control. According to Keir Lieber and Daryl Press, strategic nuclear strikes may not be credible in the minds of adversaries who believe that the United States would not resort to such extreme measures against a small-yield nuclear detonation, particularly against a non-strategic target or over issues that are not of existential importance to the United States.¹³³ Against threats of limited nuclear use, the threat of conventional strikes may be more credible because they are more usable – i.e., their threshold for use is lower. Against a country with relatively unsophisticated air defenses, such as North Korea, a limited nuclear strike could be met with a devastating conventional response that has strategic effects similar to those of nuclear weapons, while reducing the risk of a wider nuclear conflict.

In the event of a major escalation, in which nuclear use becomes a real possibility, a disarming counterforce strike may be the only viable option short of capitulation. Military commanders may need more options aimed at preventing an adversary from using nuclear weapons, other than threats of punishment to deter their use. When it comes to disarming counterforce strikes, the main challenge is the uncertainty over whether all warheads can be destroyed prior to launch.

The North Korea and Pakistan cases suggest that countries with vulnerable nuclear arsenals are likely to go to extraordinary lengths to improve survivability – including dispersing nuclear devices, using road mobile launchers, and building concealed, hardened, and deeply buried structures. Disarming conventional strikes would require intelligence and strike capabilities focused on tracking and destroying nuclear warheads and delivery systems, including road-mobile launchers, and penetrating hardened and deeply buried structures.

In the event of a credible threat of impending nuclear strike, destroying most of a country's nuclear arsenal may be better than nothing – if doing so promises to reduce the scale of an impending attack or perhaps stop it altogether. It may be possible for U.S. forces to conduct limited conventional operations in a way that promises both to eliminate an adversary's nuclear capability prior to launch and to

¹³³ Lieber and Press, “The Nukes We Need,” 2009.

control escalation. There are few examples of counterforce strikes that might serve as data to support this assertion. The closest relevant historical example would be the first Gulf War, where U.S. forces carried out strikes on Iraqi chemical and biological weapons sites while warning Iraq's leadership of the "strongest possible response" and "terrible price" that would result if it were to use these weapons.

Unless it were totally and immediately effective, a direct attack on an adversary's nuclear capabilities would raise the question of how that adversary would deal with the "use-it-or-lose-it" dilemma. In the first Gulf War, the United States explicitly limited U.S. goals in the conflict, which mitigated Iraq's temptation to choose escalation even in the face of defeat at the conventional level. How Iraq would face the use-it-or-lose-it dilemma in the second Gulf War in 2003, when the United States had more extensive objectives, proved a non-question since, at that point, Iraq apparently had no operational chemical or biological weapons to use.

The capabilities being generated under the Air-Sea Battle concept include defense as well as deep strike and are intended to be able to collectively disrupt command and control and destroy offensive weaponry such as missiles. This could make the Air-Sea Battle concept well adapted to supporting the option of using conventional weaponry to strike adversary nuclear forces. The ability to credibly threaten disarming preemptive strikes may serve as a powerful deterrent against coercion by new nuclear powers.

Future research

These findings suggest that additional research is needed into the dynamics of escalation at the lower ends of the warfare spectrum. If U.S. forces need to respond militarily to low-level attacks and other acts of coercion – whether in self-defense or with the intention of deterring such actions in the future – it will be necessary to have a better understanding of the escalatory potential of various military options. Much work has been done (theoretical and empirical research, scenario development, war-games, and computer modelling) on the dynamics of escalation at the higher ends of the warfare spectrum, particularly at the nuclear level. There has been relatively little work, however, on escalation dynamics below the threshold of major combat operations.

There is also scope for research into a wider range of coercive actions, including non-violent acts of coercion such as posturing, provocative exercises and weapons tests, verbal threats, and shows of force. There is growing concern about coercive actions by Russia in the Ukraine and other places that may, at some point, require military options that promise to send a message while minimizing the risk of further escalation. China has resorted increasingly to largely non-violent low-level coercion against Japan and several Southeast Asian countries, as well as U.S. naval forces,

while relying on its vast arsenal of conventional (vice nuclear) weaponry to deter retaliation.¹³⁴ These actions threaten to chip away at U.S. power and influence unless effective responses are developed.

Our findings also suggest a need for additional work on tactical nuclear weapons – in particular, the appropriate range of U.S. responses should U.S. or allied forces become the target of a non-strategic nuclear attack. There is considerable evidence to indicate that potential adversaries – Russia in particular – are exploring limited nuclear options. A non-strategic nuclear attack could take many forms, each of which would pose a separate dilemma for U.S. decision-makers. Below the level of strategic nuclear war, there are many potential gradations of nuclear use – for example, against different types of military forces, economic targets, locations, etc. – each posing a different set of dilemmas. There is no one-size-fits-all response, as there was with the threat of strategic nuclear attack during the Cold War.

¹³⁴ Patrick Cronin uses the term “tailored coercion” to describe some of China’s actions in pursuit of its maritime claims in the South and East China Seas. Cronin et al, *Tailored Coercion: Competition and Risk in Maritime Asia*, 2014.

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